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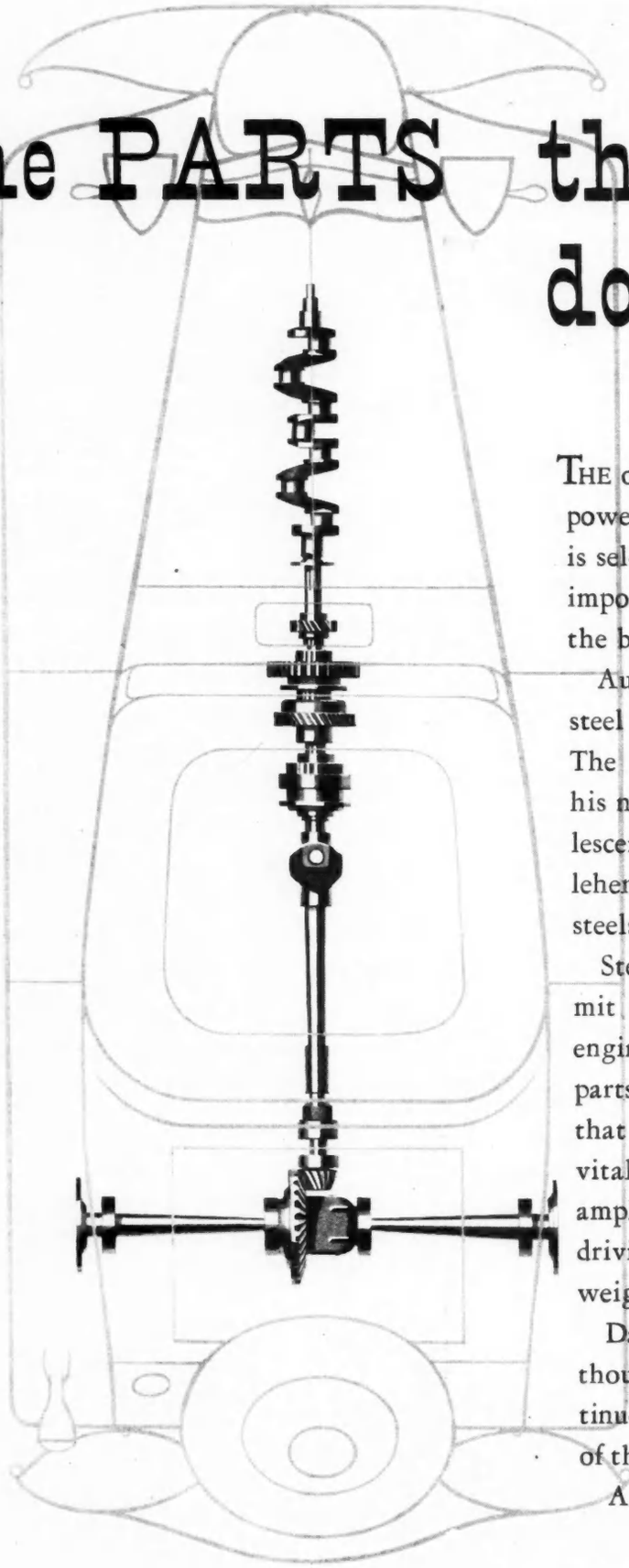
The PARTS the Owner doesn't see



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AUTOMOTIVE INDUSTRIES

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New Capital and Excess Profits Taxes Call for Re-Appraisal of Net Worth

New levies raise important financial management problems for automotive executives as once capital values are established they cannot be changed

By Joseph Geschelin
Engineering Editor, Automotive Industries

AUGUST 31 is the deadline for filing corporation capital stock tax returns for the year ending June 30, 1933, under the "new deal."

A revolutionary change in the traditional form of corporate taxation has been born of the provisions of the National Industrial Recovery Act (H. R. 5755) which became a law June 16, 1933. By means of a new capital stock tax and a new excess-profits tax, so related to each other that liability to excess-profits tax increases as the capital stock tax diminishes and vice versa, the Act for the first time establishes a fixed relation between the two forms of taxation.

If industry is to cooperate by paying a fair tax as contemplated in the NIRA, executives should act quickly and wisely in making such adjustments in the balance sheet as will make the contribution of the industry equitable to its Government as well as its stockholders.

Specifically the NIRA, Section 215 (a) imposes an excise tax of $1 per $1000 of the "adjusted declared value of its (the corporation's) capital stock." It is important to note that the new "capital stock" tax is in reality a tax on net worth and is so defined under "Instructions," (3) form 707, Treasury Department, which reads as follows: "In arriving at the original declared value, the value of the corporation's business and property as a going concern should be considered, and in doing so, it should look to the worth of the corporate assets, including its surplus and undivided profits as shown by the books, also to the franchise,

TITLE I of the National Industrial Recovery Act providing for codes of fair competition, etc., has been a subject of such absorbing interest to business in recent months, that the problems in financial management raised by the new taxes levied on net worth and profits by the Public Works section of the law to a certain extent have been pushed into the background.

Inasmuch as the first return on these new taxes must be filed by August 31, 1933, determination of the net worth basis to be used in the report to the Government is of immediate importance. This is especially so because once the net worth of a company is established for tax purposes, IT CANNOT BE CHANGED.

Because taxes are levied both on the net worth and on profits in excess of 12½ per cent on the net worth, the importance of establishing net worth initially on an equitable basis is obvious.

In the preparation of this article, Mr. Geschelin worked in close cooperation with numerous tax experts and governmental authorities. Consequently it represents a reliable analysis of the problems raised by the new levies and the manner in which they may be met.

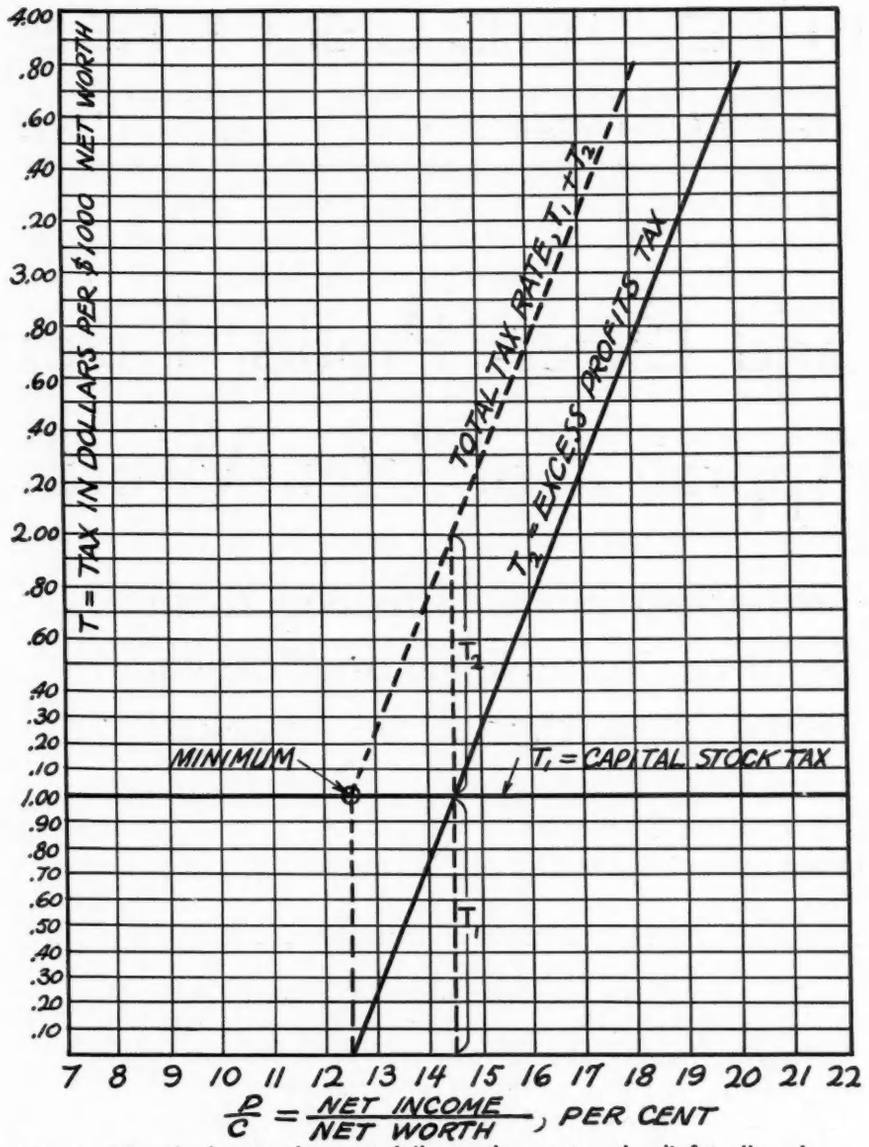


Fig. 1. Graph showing how total "reemployment and relief tax" varies with the capitalization of the corporation. The dotted line parallel to T_2, gives at a glance the total tax. In the example shown on the graph, the total tax rate when $\frac{P}{C}$ = 14½ per cent, jumps to double capital stock tax.

good will, outstanding contracts, the earning capacity of the corporation, and the market value of its shares of stock." AFTER so doing, the corporation should then determine the original declared value for its entire capital stock according to its best judgment."

Section 216 (a) of the NIRA further imposes an excess-profits tax equivalent to "five percentum of such portion of its net income as is in excess of 12½ percentum of the adjusted declared value of its capital stock." This tax goes into effect in the fiscal year beginning June 30, 1933.

Now the jeopardy to the taxpayer lies in the fact that once the "adjusted declared value of the capital stock" has been established, it may not be changed thereafter and is binding for subsequent years, excepting as affected by subsequent increases in capital and surplus or by deficits or distributions. Thus the preparation of the first return under the Act acquires extraordinary importance.

The Act provides that the adjusted declared value of net worth for the first year "shall be the value as declared by the corporation in its first return as of the close of its last fiscal year." This does not mean that the corporation is at liberty to set any value it pleases. In the first place the tax is based on the value declared by the corporation for its capital stock in the last income tax return. That's the starting point. Any adjustments that reasonably may be made must be justifiable in fact, and must satisfy the judgment of the Commissioner of Internal Revenue, in Washington.

What is to be considered in arriving at the "adjusted declared value of the capital stock?" Two case studies discussed by Tanzer[1] will make the situation clear. Assume a corporation with a net income of $1,000,000 with a declared value of its capital stock of $5,600,000, the amount of its capital and surplus as shown by its balance sheet. On this basis it will pay "reemployment and relief taxes" as follows:

Capital stock tax, $1 per $1,000 on declared capital of $5,600,000		$5,600
Excess-profits tax on net income of.....	$1,000,000	
after deducting 12% of $5,600,000, or....	700,000	
Tax at 5% on.....	$300,000	15,000
Total taxes.....		$20,600

Assume now that the corporation has patents or good will or other intangible or written down assets which it carries on its balance sheet at a nominal sum, and that such omitted assets have a fair value of $2,400,000, increasing the actual net worth of the corporation to $8,000,000, and that this amount is returned as the declared value of the capital stock. The taxes payable will then be as follows:

Capital stock tax ($1 per thousand) on..	$8,000,000	$8,000
Excess-profits tax on net income	1,000,000	
12½% of declared capital of $8,000,000...	1,000,000	
	None	None
Total tax.....		$8,000

or less than 40 per cent of the taxes of $20,600 payable on a declared capital based on the balance sheet without adjustment.

"An even more extreme illustration of the effect on tax liability of an inadequate capitalization could be found in the case of a corporation making large earnings on a small capitalization, due to a good will established over a period of years. There are many corporations engaged in the construction business, in the engineering business and other lines, which are in this position. Assuming a corporation of this kind with a capitalization of $100,000 and net earnings of $500,000. The tax on the basis of an unadjusted balance sheet would be as follows:

Capital stock tax, $1 per $1,000 on declared capital of $100,000..		$100
Excess-profits tax on net income of.....	$500,000	
after deducting 12½% of $100,000, or.....	12,500	
Tax at 5% on.....	$487,500	24,375
Total tax		$24,475

[1] "New Taxes and Tax Law Changes Under the National Industrial Recovery Act" by Laurence Arnold Tanzer, Issued by The Merchants' Association of New York.

"If, however, a fair capital value can be arrived at by capitalizing earning power at a 12½ per cent rate, there will result a declared capital of $4,000,000 with a tax as follows:

Capital stock tax, $1 per $1,000 on declared capital of $4,000,000		$4,000
Excess-profits tax on net income of.....	$500,000	
12½% of declared capital of $4,000,000....	500,000	
	None	None
Total tax		$4,000

Now it is obvious that no corporation will be permitted to juggle its books simply to avoid taxation. For example, a concern having no net income could not reduce its capital stock value to the vanishing point just to evade the capital stock tax. By the same token, a corporation could not boost its capital stock value beyond reason to avoid the excess-profits tax.

However, reasonable adjustment is expected as is evident from the language of the Act and the regulations of the Treasury Department. Once again we are at the cross roads—shall we write down or write up?

Further write-down at this stage would indicate that the corporation not only has no net income but does not expect its net income to increase appreciably for the next year or more. Even so there is great danger in writing down assets below a certain point because if the net income does go up unexpectedly due to the efforts of the NRA, the corporation will be exposed to the extreme penalty of the excess-profits tax.

Presumably a corporation might be justified in writing up the net worth, if it has been under-valued, particularly if a preliminary check shows that the net income exceeds 12½ per cent of the present net worth. While this increases the capital stock tax, the total tax payment will be considerably less as is obvious from the case studies cited above. However the amount of the write-up should be calculated with regard to anticipated profits not only for the coming year but for the following year. Here the judgment factor is of paramount importance since the declared value can't be amended once it has been accepted by the Commissioner of Internal Revenue.

The extent to which a corporation may have to anticipate future trends in net income, etc., and the extent to which it should consider changes in its present balance sheet also is dependent upon an estimate of the life of the Act. For example, it is provided that "this Act shall cease to be in effect after the expiration of two years or sooner if the President shall by proclamation or the Congress by joint resolution declare that the emergency has ended." Moreover, the President has stated publicly that the Act will be rescinded if and when the 18th Amendment to the Constitution is repealed. Some prophets expect this to happen before the beginning of 1934. How much a corporation does rely on prophecy, however, is another matter.

Since the judgment factor is so important and since many estimates have to be made in the direction of anticipated profits, changes in net worth, etc., we have developed a mathematical analysis which will simplify at least some of the mechanical work involved. The charts arising from this analysis show at a glance the direction and effect of adjustments in net worth.

In making the mathematical analysis let:

C = capital stock in dollars
P = net income in dollars
T_1 = excise tax
T_2 = excess profits tax
T = total tax
K = ratios of $\frac{P}{C}$ greater than 12½ per cent

According to the provisions of NIRA,

$T_1 = 0.001 \times C$ (1)

$T_2 = 0.05 \times (P - 0.125\ C)$ where $\frac{P}{C} = K$ (2)

then $T_2 = 0.05\ (K \times C - 0.125 \times C)$ (3)

$= 0.05 \times C\ (K - 0.125)$ (4)

Using equations (1) and (4), we set up fig. 1 which shows the variations in the total tax rate, T, with variations of the ratio of $\frac{P}{C}$.

It is notable that while, T_1, the

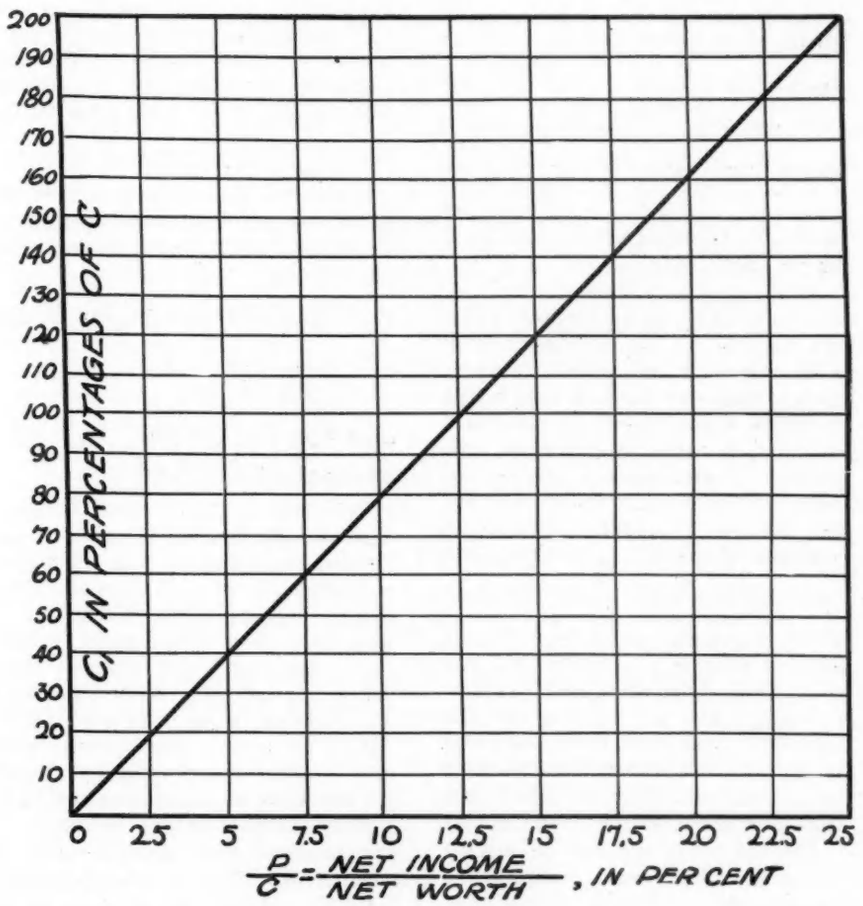


Fig. 2. Graph showing required adjustment in capitalization if the ratio $\frac{P}{C}$ is to be made exactly 12½ per cent, in cases where the first trial value of $\frac{P}{C}$ is greater than 12½ per cent. In using the chart, find the value of C_1 corresponding to the first trial value of $\frac{P}{C}$.

capital tax rate remains constant, T_2, the excess profits tax goes up steeply. The actual effect for a given situation may be seen at a glance. Thus in a specific case, T_1, remains at a dollar per thousand so long as the ratio $\frac{P}{C}$ is less than 12½ per cent. But if the ratio before adjusting the tax return is 14½ per cent, the tax rate, T, jumps to two dollars per thousand of net worth or double the minimum value.

The effect of adjustments in net worth when the ratio $\frac{P}{C}$ is greater than 12½ per cent is made obvious in fig. 2, which is based on the following analysis:

if $\frac{P}{C} = K$, what change must be made in C to get the ratio to 12½ per cent

i.e., $\frac{P}{C_1} = 0.125$

now, $P = KxC$ (5)

and, $P = 0.125\ C_1$ (6)

then, $K\ C = 0.125\ C_1$ (7)

and, $C_1 = \frac{K}{0.125}C$ (8)

From Fig. 2 therefore, for a given trial value of $\frac{P}{C}$ before adjustment, the value of a new net worth, C_1 is found by multiplying C by the percentage given.

In making an adjusted statement the point to be reemphasized is that the return can not be amended at a later date if and when it may be found that net income has begun to climb. Consequently a good deal of thought must be given to estimates of anticipated profits not only for the coming fiscal year but for the following year. One problem that may come up is this: suppose that the ratio $\frac{P}{C}$ on the basis of an estimated net income for the coming year is less than 12½ per cent. Suppose further that it seems probable that net income for the following year may jump the ratio to 20 per cent which would result in a total tax rate of $4.75 per thousand of net worth (see Fig. 1.)

If such an event can be anticipated, it would seem desirable to increase the net worth, if previously undervalued, sufficiently so that the ratio $\frac{P}{C}$ would drop to 12½ per cent. From Fig. 2 it is evident that the adjusted value of net worth should be increased by 60 per cent over the present net worth. Obviously the increase in net worth would raise the capital stock tax correspondingly for the first year, which is insignificant in comparison with paying a tax rate of $4.75 per thousand.

TREASURY Department Regulation No. 64 relating to the special tax provisions of the Act was not available for review when this article was written, but should be ready for distribution by the time this issue reaches readers. For further information on this subject, readers should obtain a copy of this regulation.

The excess-profits tax rate goes up so steeply that any justifiable revaluation is an economy. Thus in the cases immediately above if $\frac{P}{C}$ on the basis of unadjusted capitalization is say 14.5 per cent and the total tax rate (see Fig. 1) is two dollars per thousand of net worth we may readjust the capitalization by adding 16 per cent to the capital value (see Fig. 2) in order to reduce $\frac{P}{C_1}$ to 12½ per cent.

Then the total tax rate will be $1.16 per thousand instead of $2.00, on the same net worth, thus saving 42 per cent.

Similarly, if $\frac{P}{C}$ originally is say 20 per cent, it would be necessary to increase the capitalization 60 per cent if that were justifiable, in order to reduce the ratio to 12½ per cent. The reason is obvious. In the first case, the total tax rate is $4.75 per thousand; in the second, the tax rate would be only $1.60 on the same net worth, thus saving 66 per cent.

Incidentally since the capitalization must be doubled to reduce $\frac{P}{C}$ from 25 per cent to 12½ per cent, this ratio seems to be the limiting value to adjustments.

The extent to which an undercapitalized corporation may be penalized by the excess-profits tax is evident from the foregoing. Consequently for the first return under the Act, the Government is giving industry a fair opportunity to adjust its balance sheet to include on the balance sheet assets which are either not included or carried at nominal values. This applies particularly to good will, patents, and other intangible assets.

Corporations which wrote down intangibles to one dollar or to some nominal figure in times of stress and vanishing profits have the option writing up to original values or present values if conditions warrant and if an excessive tax penalty may be avoided thereby.

Interestingly enough this is clearly the intention of the Government as evidenced by the language of the Act.

London Passenger Transport Unified

ON July 1, nearly all of the passenger transport of greater London passed under the control of a single authority, the London Passenger Transport Board. The Board will operate the subways, street cars, omnibuses and coaches (the latter apparently what we call sight-seeing buses in this country) within an area of approximately 30 mile radius from Charing Cross. No less than 89 companies and subsidiary companies are included in the amalgamation, with an aggregate capital of approximately $600,000,000. When the deal is completed the London Passenger Transport Board will be the largest urban passenger transport concern in the world, operating 11,430 vehicles of all kinds and carrying some 3500 million passengers a year.

A standing joint committee of the Board and of the railroads operating within the metropolitan area will be formed to assure coordination of suburban services. Receipts from passenger traffic between any two stations on the sections of the four main-line railways within the London passenger transport area will be pooled with the receipts of the Board, and the total divided between the railroads and the Board in a predetermined ratio.

Biggest Dirigible Due in the Spring

WORD comes from Friedrichshafen, Germany, that work on the new dirigible, the LZ-129, is progressing at the Zeppelin Works there and that it is expected to complete the ship next spring. The new dirigible is almost twice as large as the Graf Zeppelin and also somewhat larger than the Akron and Macon.

JUST AMONG OURSELVES

Ford and the N.A.C.C. Code

THE automobile manufacturers have submitted a code to Washington. This was the inevitable outcome of the deliberations which went on for nearly two months, despite various statements from time to time indicating that there was some doubt about whether or not a code would be offered.

As long ago as July 1, we stated in these columns that the automobile manufacturers would submit a code. That definite predication was based on statements already made by General Johnson and the implications of those statements regarding the Government attitude toward noncomformists. The positive speaking NIRA administrator finally picked up the code on a flying trip to Detroit, lacking only the signature of the Ford Motor Co. Hearings on the code may be taking place as this item is published.

Ford will abide by the provisions of the code as finally approved, whether he finally signs the agreement or not—unless we are very much mistaken. Any refusal to sign on the basis that wages would have to be reduced to conform to code practice is untenable on the face of the law which makes no limitations whatever on the height to which wages may be raised. In making comparison of wage rates in various companies of the automobile business, incidentally, it is well as keep in mind the importance of wage rate averages as well as minimum wage rates. The former is probably more important than the latter so far as total buying power is concerned.

* * *

Labor Relations a Vital Question

WHILE the minimum wage and maximum hours provisions of the new automobile manufacturers' code will have some marked economic effects, the working out of labor relationships under the new regime remains the most important item of uncertainty. Whether or not the brief statement favoring the open shop which was a part of the originally submitted code remains a part of the finally approved code doesn't really matter a great deal.

If it stays in it will have the desirable effect of helping to offset certain untrue statements which have been made by some labor union organizers in their current efforts to recruit new union members among automotive workers. Workers have been made to believe in some instances that union membership was necessary if they were to be permitted to work under NIRA. Other untrue statements as well are said to have been made in more than one instance.

Nevertheless, the real issue is much more fundamental. Under the new code workers in automotive plants do have the right to join any organization they may please and automotive employers are committed to collective bargaining in some form if demanded by employees.

* * *

Works Councils May Be Solution

IN those plants where relations between employers and employees already actually are satisfactory, the genesis of a works council plan of organization would be a normal development. It would be a natural birth of an orderly means for better carrying out the spirit of friendly industrial relationships already existing. Some successful works council plans seem almost certain to develop in the automotive field on this basis.

The works council idea has operated successfully in a number of companies from the standpoint of the employees as well as of the employers. It offers ideas in industrial relationships which should have strong elements of interest for every automotive manufacturer at this time. It has wide possibilities as an instrument for making easier fair-dealing with employees; it has almost no possibilities as an instrument designed chiefly to prevent some other type of organization.

* * *

Even the Kiddies Want It

WHO said streamlining wasn't important on low speed vehicles? The Metalcraft "Scamp" is now in production, thus confounding all such ideas. In case you never heard of the "Scamp," you'll be interested to know that it is a new streamlined coaster wagon for boys and girls. It has airplane "pants" fenders, a low center of gravity, rubber tires and an electric headlight.

While this plaything may be a technical laugh, we commend to sales-minded automotive men a not-too-jesting consideration of the merchandising implications of its introduction.—N. G. S.

International Automotive C

A review of previous world conventions which contributed much to automotive progress, occasioned by the coming super-meeting to be staged by the S. A. E. in Chicago

WITH all plans practically complete for the super-meeting which the S.A.E. will stage in Chicago during the week of August 28 under the capable direction of General Manager John A. C. Warner and with the greatest technical program in the society's history announced by Meetings Committee Chairman Alex Taub, the International Automotive Engineering Congress has become the focal point of interest among the industry's engineers.

While the coming meeting is of dominant interest at the present time, among the industry's old-timers and others whose recollections do not go back so far, the Congress will bring back memories of previous international automotive meetings of both technical and non-technical character.

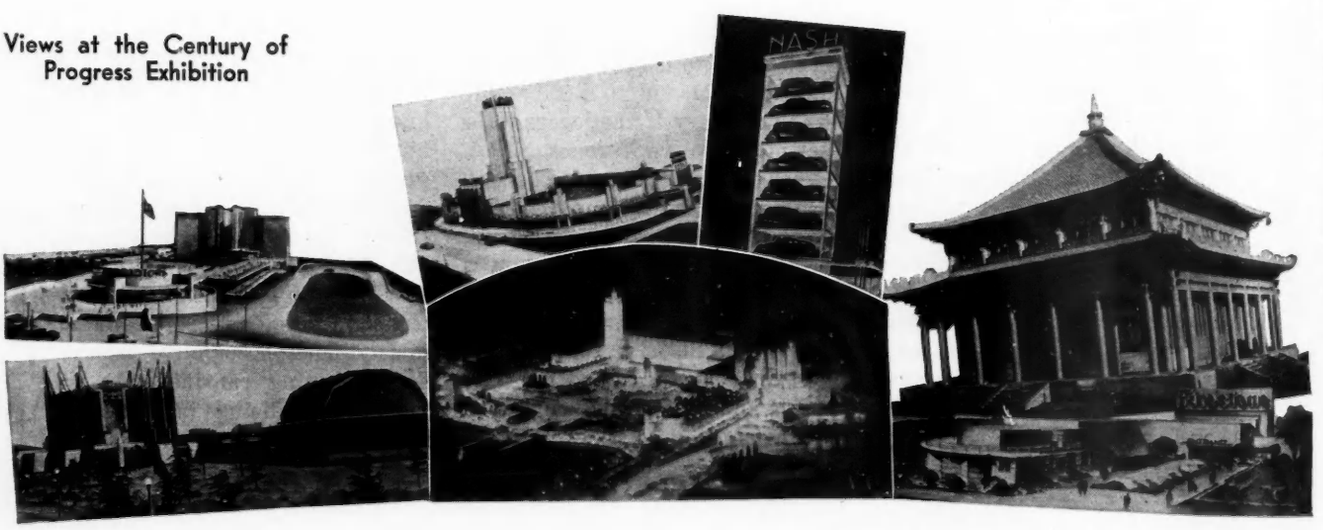
The first of these international congresses was held in Paris in 1900, in connection with the world's fair in that city. At that time the automobile industry was in its infancy, and France was the undisputed leader. Considering the youth of the industry, quite a large section in Machinery Hall in the Champ de Mars was devoted to motor vehicles, and there was an overflow exhibit at Vincennes, a suburb of Paris, where more bulky exhibits, such as those of railroad equipment, were staged. Most of the automobile exhibits at Vincennes were of commercial vehicles.

Although one or two motor vehicles were exhibited at the World's Columbian Exposition in Chicago exactly 40 years ago, they were more or less a curiosity, and the Paris Fair of 1900 was the first event of the kind at which there was what may be described as an industrial exhibition of motor vehicles. Large spaces were devoted to automobile exhibits both in the Transportation Building on the Champ de Mars and in the so-called Annex in the Bois de Vincennes just outside of Paris. Early in June, when a good many stands were still empty, there were already on exhibition at the Champ de Mars 140 French and between 40 and 50 foreign automobiles, and in addition a large number of motor bicycles and tricycles. American cars were exhibited only at the Bois de Vincennes. They included four Columbia electric and two Locomobile steam vehicles. A compilation made later during the summer gave the total number of motor vehicles and motorcycles at the Fair as 627, of which 512 were vehicles and chassis.

While the first automobile congress was international in scope, most of the papers presented were by Frenchmen. These dealt with the many engineering problems brought to the front by the new type of vehicle, such as the design of gasoline engines, steering, brakes, road resistance or traction resistance, wheels and axles, tires, frames, spring suspensions, etc. Some of the papers read rather quaintly today, in the light of a third-of-a-century's further progress in automobile engineering.

A report on the first congress ap-

Views at the Century of Progress Exhibition



...veCongresses—

By P. M. Heldt
Engineering Editor, Automotive Industries

John A. C. Warner, S.A.E. general manager, under whose capable direction the International Automotive Engineering Congress will be staged in Chicago beginning August 28.

peared in *The Horseless Age* of Aug. 15 and Aug. 22, 1900. The congress was presided over by M. G. Forestier, chief engineer of roads and bridges, who in his opening address said the steam engine had then reached such a degree of perfection that it was scarcely necessary to deal with it from the theoretical standpoint at the congress. As regards the gasoline engine, nothing was known regarding "the relation of the bore of the cylinder and the area of the explosion chamber," and this was a matter that would have to be discussed. (This is probably an unskilled translation of a lay reporter, and what M. Forestier no doubt referred to was the volumetric compression ratio.) Other problems that called for discussion were the elimination of vibration (which, the speaker said, had been nearly solved in several vehicles at the exhibition); speed control of the gasoline engine, systems of transmission, and—most important of all—the capacity of storage batteries. In this connection M. Forestier mentioned that several companies were then advertising electric vehicles with a mileage of 90-120 on a single charge, but to judge by the results obtained in the Storage Battery Contest and the experience of the two companies which had run electric public service vehicles in Paris the previous two years, these performances could be regarded only as mere *tours de force*, and the question was, how long would the batteries last?

Among the topics that elicited considerable discussion at this first international congress were the relative advantages of hot-tube and electric ignition, and the possibilities of rotary engines.

There was a second international automobile congress in Paris in 1903, and one of the more notable papers presented on this occasion was by M. Gaillardet, on "Gasoline Motors." Following are a few quotations from M. Gaillardet's paper:

"If an engine of a given design is provided with different combustion chambers varying only in form, the best results are obtained with the one which concentrates the greatest proportion of the combustible mixture directly over the piston, in such a manner that its molecules are as near the piston as possible." M. Gaillardet enumerated the advantages and disadvantages of high compression and said that in practice a compromise was made and the compression limited to about 71 lb. per sq. in.

The third international automobile congress was held in Milan, Italy, in May, 1906, under the patronage of the King of Italy and under the chairmanship of Frederico Johnson, president of the Italian Touring Club, and Silvio Crespi of the Automobile Club of Milan. A notable paper presented at this congress was on "Transmission in Gasoline Cars," by Alberto Ballocco. Mr. Ballocco said in his paper:

"Variable speed devices always have been an attractive problem for the inventor, and every known system of speed changing in use in other branches of mechanics has been applied to automobile work, including belts, expanding pulleys, friction disks, planetary gears, etc.; but designers always have returned to the classic change-speed gear. . . . The driving shaft carries a series of toothed pinions of increasing diameters, which pinions are adapted to mesh with corresponding toothed wheels of decreasing diameters on the driven shaft."

The Milan congress was the last of the international congresses of what might be called the first series. By that time interest in automobile design had become so

widely disseminated in the different industrial countries that engineers in these countries had plenty of opportunity to discuss their problems with their own nationals. In fact, the holding of the Milan congress corresponds very closely with the organization of the Society of Automobile Engineers in this country and of the Automobiltechnischer Gesellschaft in Germany. The British Institution of Automobile Engineers was founded some years later, while France, where automobile development proceeded at the most rapid pace during the early years of the century, has had a society of automobile engineers only since 1926. This delay in the organizations of the French automobile engineers was due to a considerable extent to the fact that in the early years of the industry in France most of the activities connected with the industry and the movement centered in the Automobile Club of France, which had a technical committee that occupied itself to a certain extent with problems of automobile engineering.

World Motor Transport

A second series of international congresses was started in 1924, when the National Automobile Chamber of Commerce organized its First World Motor Transport Congress in New York during May. Delegates from more than 50 countries were present. Addresses were delivered by both American officials and foreign delegates on various phases of the automobile industry, including selling, servicing, highways, finance and traffic. It is obvious by comparing this program with that of the last previous international congress that the problems confronting the industry had changed materially. Instead of an international gathering being called to discuss problems of automobile design, the subjects on the agenda were sales, service and use. Amplifiers were provided at the meetings in order that the various addresses could be translated into four languages at the same time, thus enabling all present to hear the addresses in their own language.

The second World Motor Transport Congress was held in New York in January, 1926, and the third in the same city a year later. Both of these congresses formed part of the automobile-show-week program. This gave delegates from abroad the opportunity to visit the automobile show. At each of these two congresses a number of sessions were devoted to the discussion of subjects similar to those dealt with at the first one. Tours through the city of New York were arranged to give the delegates the opportunity to see the working of traffic regulations, use of motor vehicles, highways, etc. On Tuesday evening of Show Week the foreign delegates were guests of the N.A.C.C. at its annual banquet. During the week following the show, tours of the various automobile factories in and around Detroit were arranged for, so that the foreign delegates could see the manufacturing methods in use in the American industry.

Since 1927 the World Motor Transport Congress has been held abroad under the auspices of the Bureau Permanent International des Constructeurs d'Automobiles, a federation of national associations of automobile manufacturers. In 1927 the congress was held in London, being organized by the Society of Motor Manufacturers and Traders, Ltd. The fifth congress, in 1928, was held in Milan, Italy, Sept. 25-29, 1928, being organized by the Unione Italiana Fabbriche Automobili, in cooperation with the Royal Automobile Club of Italy. This congress was followed by an interregnum of five years, but in February of this year the sixth congress was held in Berlin, at the time of the automobile show there.

1913 Summer Meeting

Now that the S.A.E. is calling another congress, discussions naturally will be principally on engineering topics once more. It may be recalled in this connection that some of the S.A.E. meetings of years gone by have had a certain international flavor even though not proclaimed as international congresses. Thus the 1913 summer meeting, which was held on board a steamer on the Great Lakes, was attended by a delegation of British engineers who also attended the Indianapolis race that year and made a round trip of inspection to the centers of the automobile industry, and in 1928, when the summer meeting was held in Quebec, Canada, it was again attended by a number of British engineers, including the president of the Institution of Automobile Engineers for that year, and these engineers contributed a number of papers to the meeting.

Research Data on Iron and Its Alloys Summarized

IN 1929, after some preliminary work, The Engineering Foundation organized the "Alloys of Iron Research" to review and appraise critically all of the research on iron and its alloys reported in the technical literature of the world. The work has progressed to the stage where most of the important journals in English, German, French and Swedish, from 1890 to date, have been gone over and all data of importance abstracted and classified. The files now contain more than 12,000 critical abstracts, from nearly 5000 technical papers. This is probably the largest collection of classified data on the whole field of alloy steels and cast irons in existence, and is being made available for the use of scientists, researchers, and engineers who wish a reliable summary of past work on alloy steel and alloy cast iron.

This comprehensive review of the literature of the world was made primarily for use as a basis for a series of monographs on alloys of the element iron with 38 of the 92 chemical elements. The first monograph, "The Alloys of Iron and Molybdenum," was published in December, 1932; it covers the manufacture, properties, and uses of the increasingly important molybdenum structural steels, molybdenum tool steels and nitriding steels, and molybdenum cast irons.

The second volume of the monograph series, "The Alloys of Iron and Silicon," is in press and will be published in a few weeks. In this book will be found a critical résumé of all data on steel and cast iron containing silicon as an important alloy.

There are three classes of iron-silicon alloys, viz.: silicon structural steels, silicon electric steels, and silicon acid-resisting irons which this volume discusses.

Does Height of Center of Gravity Affect the Tendency To Skid?

by P. M. Heldt
Engineering Editor, Automotive Industries

There has been some discussion in automobile publications recently with regard to the influence of the height of the center of gravity of a car on its proclivity to skid, and it has been claimed that the higher the center of gravity is located above the ground the less tendency there is for the car to skid. If this were correct, then the whole tendency in car design up till now would have been wrong in this respect at least. Over-all heights and centers of gravity have been lowered constantly; the chief object has been to increase the safeguards against overturning on curves, and if the skidding tendency were increased at the same time the tendency to overturn decreased, then, of course, it would be very questionable whether the cause of safety was advanced at all.

The location of the center of gravity has an important effect on the safety of the car only while turns are being negotiated and while the car is in a skid. In the former case there is a centrifugal force acting on the mass of the car at its center of gravity, which tends to overturn it. If we assume that the center of gravity is located in the fore-and-aft plane midway between the right and left wheels, the moment which tends to keep the car on an even keel is equal to the product of its weight into half of its width of tread. The moment which tends to overturn it is equal to the product of the centrifugal force into the height of the center of gravity above the ground. If the moment which tends to upset the car exceeds the moment which tends to prevent it, the car will upset, and it follows from this that the higher the center of gravity is above the ground the more easily the car is upset. This much is generally granted, and from this point of view, therefore, a low center of gravity is a positive advantage.

But in negotiating turns there is danger also from skidding, and is it not possible that the skidding tendency will be affected by the height of the center of gravity? Direct experiments on the subject are difficult, but it seems that the railroads experimented with locomotives with the center of gravity at different heights above the rails and found that the strain on the rails was less with a high center of gravity. From this, some one drew the conclusion that when a locomotive runs on a curve the centrifugal force on it is converted into a downward force on the outer rail which tends to hold the rail in position instead of wrenching it loose from the ties, and that the higher the center of gravity the greater this conversion of horizontal centrifugal force into a vertically downward force on the outer rail. If the center of gravity were only slightly above the railtops, then, of course, practically all of the centrifugal force would act horizontally on the outer rail and tend to dislodge it.

Whatever the explanation of the experience of the railroads may be —and possibly a greater cushioning against lateral forces of the spring-supported mass when perched high may have had something to do with the observed results—the fact is that the centrifugal force, if the car turns in a horizontal plane, is entirely horizontal and has no vertical component. Whatever the ratio of this force to the weight of the car, the force with which the latter presses against the ground will not be affected in the least. It is true that the ground pressure of the inner wheels will be decreased and that of the outer wheels increased, but the decrease at the inner wheels is exactly balanced by the increase at the outer wheels and the total ground pressure remains equal to the weight of the vehicle, so that the centrifugal force remains effective in toto in the direction parallel to the plane of support of the vehicle, and therefore effective as a skid-producing force.

If the curve is banked the centrifugal force has a component perpendicular to the supporting surface, and on a banked turn the pressure of the vehicle against its supporting surface is changed by the centrifugal force. On a positively banked turn the vehicle presses against the supporting surface with a pressure greater than its weight. This increase in pressure against the supporting surface certainly increases the adherence of the wheels to the ground and thereby prevents skidding. However, the proportional increase in the total ground pressure is independent of the

height of the center of gravity and depends only on the radius of curvature, the degree of the bank, and the speed. With negative banking, that is, where the outside of the turn is lower than the inside, the total ground pressure is reduced by the centrifugal force and here again the reduction is independent of the height of the center of gravity and depends on the same factors as in the case of positive banking.

Therefore, when a vehicle is making a turn while supported in a horizontal plane, the centrifugal force acting at its center of gravity manifests itself as a force which tends to cause the tires to slide sideways over the supporting surface, and this force is not affected in any way by the height of the center of gravity. Of course, the pressure of the inside wheels against the road surface is decreased and that of the outside wheels increased an equal amount and if there is any difference in the tendency to skid, it would be due to the fact that the coefficient of friction between tire and ground varies irregularly with the specific pressure at the contact surfaces. This might occur, for instance, if the road surface were covered with a layer of slime or slush which would be cut through by the outside wheels when most of the weight of the car was thrown onto them, but not when each wheel supported only its proportional share of the load. This, of course, is quite an exceptional case.

A somewhat similar confusion of ideas was involved in an explanation of the increase in the draft of railroad vehicles due to a side wind, which appeared in a British publication some time ago. This increase in draft is usually ascribed to friction of the wheel flanges against the rails. The article in question maintained that this explanation was not necessary, since the increase in the volume of air displaced by the train when moving through a side wind furnished a sufficient explanation. This increase in displacement is arrived at by considering the air to be stationary and the train to be moving laterally at a speed equal to that of the wind, in addition to its forward motion.

That this reasoning is fallacious is easily seen when it is considered that when the train is stationary on the track while a side wind is blowing it is displacing a great deal of air under this assumption, yet it does not consume any power at all. In the case of a wind absolutely at right angles to the direction of motion, the force of the wind has no component which is in opposition to the motion of the train. Therefore, whatever increase in traction resistance may be caused by the side winds must be due to secondary effects, such as friction between wheel flanges and rails. Of course, if the wind blows in a direction which is partly opposed to the direction of the train, then there is a component of its dynamic force which opposes the motion of the train and adds to the tractive force required.

New Continuous, High-Speed Zinc Plating Process

EFFORTS are being made continuously further to improve the methods of rust-proofing ferrous materials, effective rust protection being necessary particularly where comparatively thin sheets are exposed to atmospheric influences. News comes from England that Sherard Cowper-Coles, the inventor of the sherardizing process, much used for rust-proofing electrical fittings, has developed a new process for electrodepositing zinc on steel plate, and also a machine which by a continuous and automatic process plates standard sized sheets at the rate of several a minute.

The installation consists essentially of a bath of electrolyte through which the sheet, forming the cathode, is passed several times, until a deposit of the required thickness is obtained. Anodes in the form of bars are placed across the top of the bath and dip into the electrolyte. At the entry end of the bath there is an inclined plane on which the steel sheet is placed by hand. It slides down the incline and at the bottom of the vat is caught between steel rollers, the bearing of the lower one of which is connected to the negative terminal of the plating generator.

The rollers, which are electrically driven, propel the sheet through the bath underneath the anodes, and suitable guides in the bath direct the sheet into a second pair of rollers at the exit end of the bath. Additional guides then return the sheet over the bath to the entry end and drop it onto the inclined plane, where the cycle begins anew.

Continuous automatic plants, which are being constructed for coating sheets for the automobile industry, etc., consist of a train of baths and vats similar in principle to the apparatus just described. The sheets are fed in at one end and propelled by means of rollers and guides, first into a pickling vat, then into a washing bath, then into one or more depositing baths, and finally they are sprayed with water, passed between rubber rollers to remove the excess moisture, and dried over electrically-heated driers.

The coated product, to which the name Sherrite steel sheet has been given, is claimed not to rust even at a cut edge. Brass and copper also can be plated on steel in this way, and smooth, bright deposits are obtained in every case.

British Propose to Tax Diesel Fuels

IN THE British budget for the coming year provision is made for a tax of one penny per gallon on all heavy oils, including the fuels used in automotive Diesel engines. The tax will apply also to all lubricating oils, oils used for commercial and domestic heating, oils used as fuel under steam boilers, etc. In the case of the cheaper grades of oil, such as used for firing marine boilers, it is figured that the tax will increase the cost of the fuel to the purchaser by about 50 per cent. The relative economy of automotive Diesel engines should not be affected seriously by the proposed tax, however, in view of the fact that the advantage of the Diesel in this respect is in part due to a considerably lower consumption, besides which there is a much higher tax (8 pennies per gallon) on gasoline.

Who Is This Man Lea?

A sketch of the background of experience which the NIRA deputy administrator in charge of automotive and tire codes, will bring to his job.

Col. R. W. Lea and his chief, Gen. Hugh Johnson

COL. R. W. LEA, a deputy administrator of the National Recovery Administration, who will handle the automotive codes, and have charge of tires, is a native of Wisconsin, and graduated from the University of Wisconsin in 1907 with the B.A. degree. He was a stroke on the Wisconsin crews of 1905, 1906 and 1907, and was elected to the honorary society of Beta Gamma Sigma.

From 1907 to 1910 he managed the plants of the Otis Elevator Co. in Moline and Quincy, Ill., and from 1911 to 1917 he was vice-president of the Moline Plow Co., having charge of manufacture and later taking up domestic and export sales and executive duties. In 1917, he was commissioned major in the United States Army and was put in charge of all animal-drawn transportation of the army, including combat wagons, escort wagons, ambulances, ration carts, ammunition wagons, camp equipment and harness and saddles. He was stationed first at Jeffersonville depot.

From about December, 1917, Mr. Lea served under Gen. George W. Goethals, Brig. Gen. R. E. Wood and Brig. Gen. W. E. Rose, as colonel in the Purchase, Storage and Traffic Division at Washington

His automotive connection was in the position of general manager of the Stephens Motor Car Co., Freeport, Ill. He served in this capacity from 1919 to 1924, inclusive. He was president of the Moline Implement Co., Moline, from 1924 to 1929, when the company was sold to the Minneapolis Moline Power Implement Co., Minneapolis, Minn. From 1929 to 1931, Colonel Lea was president of Lea Fabrics, Inc., Newark, N. J. He was associated with the Continental Illinois National Bank and Trust Co., Chicago, on industrial loans from 1931 to 1933.

When with the Purchase, Storage and Traffic Division of the War Department, Colonel Lea was associated with General Hugh S. Johnson, Industrial Recovery Administrator.

Production in Last Half of 1933 Offers Big Field for Speculation

Many factors and changing conditions to be considered, including effect of Recovery Act and early announcement of new models

ESTIMATES as to what the last six months of 1933 hold in store for the automotive industry are as varied as there are people willing to make them. One finds, for instance, guesses as to domestic passenger car sales during the last six months ranging from about 350,000 to 750,000. At the best such guesses are just that —guesses, and those who make them are the first to point that out.

Manufacturers are playing their cards close to their respective vests on commitments. A flurry of attempts on the part of a number of manufacturers a month or two ago to obtain long term commitment prices on certain items of equipment and raw materials failed to develop into broadened purchasing.

No Price Rise Likely

While automobile producers realize that sooner or later mounting production costs will have to be reflected in higher prices, they are unwilling to take the bull by the horns at this time, and for a number of reasons. Among these are:

1. Possibility of seasonal decline in automobile purchasing, aggravating the competitive situation would make this an inauspicious time for increasing prices.

2. Car manufacturers today are on a money making basis and generally speaking have been during the past three months. Unless profits again approach the zero mark they are willing to ride along on a slowly declining margin of factory profit per car, in the hope that added volume will compensate therefor.

3. A general feeling that price increases at this time—particularly if they come as a result of cooperative action—would be antagonistically regarded in Washington, where the industry today is possibly being regarded to some extent with disfavor due to its slowness in submitting a code under the Industrial Recovery Act.

It is probable therefore that no major price increases will be registered until new model announcement time, taking advantage of introduction of 1934 models to increase list prices either actually or by reduction in "value" at the same prices. On the other hand it is quite conceivable that even then there may not develop major changes in prices, if sales volume in the meantime continues to grow.

Indications are becoming more evident that a number of new car announcements will be made earlier than had been anticipated. Dealer stocks being at a satisfactorily low point in consideration of new car movements, manufacturers in some cases are desirous of obtaining the greatest benefit of good fall business by the introduction of new models which will place them in a better competitive position.

Another factor which is leading manufacturers toward a favorable consideration of earlier introduction is the rapid putting into effect of the National Recovery Act. New model announcements will offer car producers an opportunity to adjust their prices in line with increasing costs without obvious price increases which otherwise would be necessary to remain on a profitable basis, as long as present designs are continued.

Experimental Work Pushed

As a result of these conditions, orders to complete experimental work as rapidly as possible have been issued in several automobile plants.

Coming back to sales expectancy for the last six months, considerable argument prevails as to the potential quantitative influence of bettered agricultural prices. These increases are of course to some extent offset by smaller crops due to drought particularly, with another balancing favorable factor in the form of 1932 crops still being held by farmers against a period of higher values.

According to Rufus L. Cole, Vice-President in Charge of Sales of Hupmobile, one of the biggest factors tending toward further gains in business is the subsidence of the general timidity and fear of the future, current up to this spring. Mr. Cole feels that the manufacturers of medium priced cars have much to gain from this condition, on the assumption that most buying to date has been mainly on a pure price basis.

Sales Managers' Views

"As far as we are concerned," Mr. Cole stated to the writer, "we know that we will sell more cars the last half of this year than in the last half of 1932."

Most executives asked they be not quoted as to expectancies of their companies for the next few months. A. R. Vanderzee, general sales manager, Dodge Brothers Corporation, was representative of the more optimistic group. Mr. Vanderzee, while expecting July to show retail sales slightly below June, is looking for a further upswing in sales later in the year.

"For Dodge Brothers dealers," Mr. Vanderzee states, "we expect the last half of the year to be about equal to the first half. The last quarter of the year particularly should show up much better than did the first quarter. June may have been the peak for the present, but there is a good possibility that another peak may be reached around September or October when farm buying comes in stronger."

Mr. Vanderzee, as do numbers of other executives, believes that better farm product prices and increased wages will be major factors

in stimulating buying later in the year. Several sales managers state that their dealers are reporting that farmers are beginning to look around at cars although they are deferring buying until crop time.

Most major parts producers report that their July business is just about as good as June but that they are still very much in the dark as to the outlook for August and September. Original equipment suppliers to truck manufacturers and the latter themselves in some cases are expecting no serious seasonal decline in truck purchasing this year. Large fleet buyers, who have been out of the market for some time now, are at last planning to place some deferred replacement purchases of haulage equipment.

There are few bad signs on the horizon for the industry at present and executives feel justified in being more optimistic as each month rolls by with steadily recorded improvement, but they most certainly are not willing to gamble as yet. They would rather be wrong the right way.

Ex-Cell-O Precision Boring Machines

SINGLE and double-end junior precision boring machines for manufacturers who require short production, high precision work on such parts as connecting rods, pistons, gears, pump cylinder, compressor bodies, etc., have been placed on the market by the Ex-Cell-O Aircraft & Tool Corp., Detroit, Mich.

The double end machine, Style No. 1212, is shown in Fig. 1. Some of the outstanding features of this machine are the compact design, low operating cost, full hydraulic control, uniform accuracy on production work, rough and finish operations on the same machine for aluminum, bronze, cast iron and steel parts.

A bridge is provided at each end of the machine, upon which one or two boring units are mounted. Two borings units with a drive motor mounted above them are shown at the left, and one boring unit with motor mounted beside it, at the right. The type and number of boring units used depend upon each individual application. Each bridge is adjustable on its own rails, providing a maximum distance of 28 in. between boring units and a minimum distance of 12 in.

There are two different methods for driving the boring units—the inbuilt motor and the belt-driven type. When using the inbuilt type, a three-quarter horsepower motor rated at 1800 or 3600 r.p.m. is used. Only one speed can be obtained from this type of boring unit. On jobs where a range of speeds is required the belt-driven boring unit is used. A one-hp., 1200-r.p.m. motor may be mounted beside the boring unit or directly above it, depending upon the number of boring units required, as illustrated in the photograph.

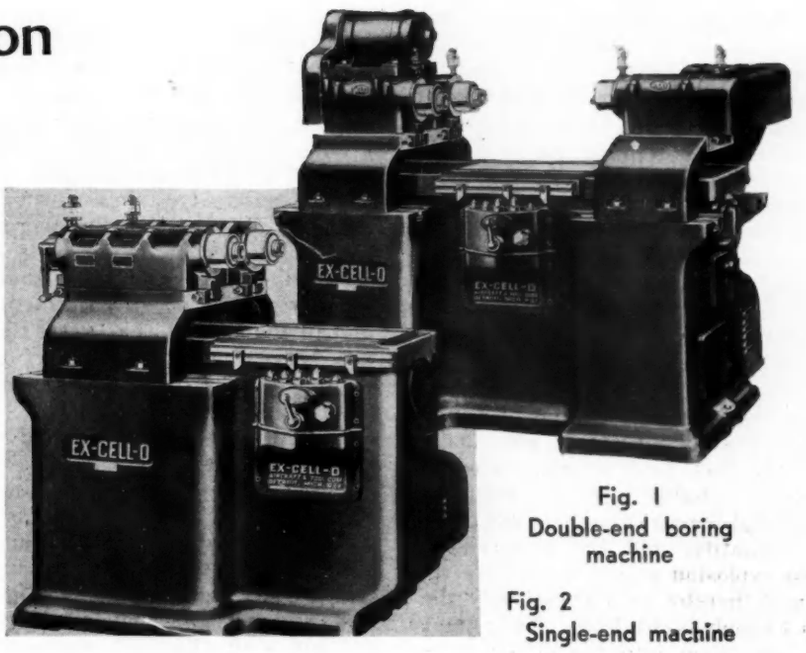


Fig. 1
Double-end boring machine

Fig. 2
Single-end machine

At the back near the bottom of the machine and mounted in line are the main drive motor, coolant and hydraulic pumps. The motor is one and one-half horsepower, three-phase, 220 or 440-volt, 60-cycle, 1200-r.p.m. A suitably ventilated guard is provided for covering these units. The coolant pump can be disconnected at any time should the coolant not be required on the job.

The hydraulic control unit is of Ex-Cell-O design and is mounted on the front of the machine below the fixture table. Near the top of this unit is an oval plate, which can be removed for adjusting the rate of table feed in each direction. One hundred pounds pressure is maintained in the system.

The machine complete weighs approximately 3000 lb.

For applications where only one or two boring units are required, the single-end machine, Style No. 2112, has been developed. This machine, Fig. 2, is compact in design and uses the same mounting bridge, hydraulic and coolant systems as are used on the double-end machine.

A different type of boring unit is used on this machine. These units have an inbuilt motor directly connected to the boring spindle and mounted in one holding bracket. These units and those shown on the double-end machine are interchangeable by the use of the proper bridge.

To operate this machine, the adjustable dogs, which operate the plungers on top of the hydraulic unit, are adjusted so that the high and low speeds, reverse and stop dogs conform with the required operating cycle. After these are set, the machine is started on its cycle by moving the hand lever located in the center of the unit to the right, and the table is automatically stopped when through its cycle.

Angularly Flexible Mountings May Find Wide Use with Diesels

IN addition to its use in passenger cars, angularly flexible mounting of engines may find wide application in commercial vehicles if, as is to be expected, Diesel engines come into extensive use in trucks and buses in the future. The reason for this is that torque fluctuations at idling speeds are vastly greater in the Diesel than in the spark-ignition engine. In an engine of six or more cylinders, torque fluctuations are not very great when the engine is operating under load at normal speed, and vibrations due to such fluctuations certainly are most apparent when the car is at a standstill and the engine is idling.

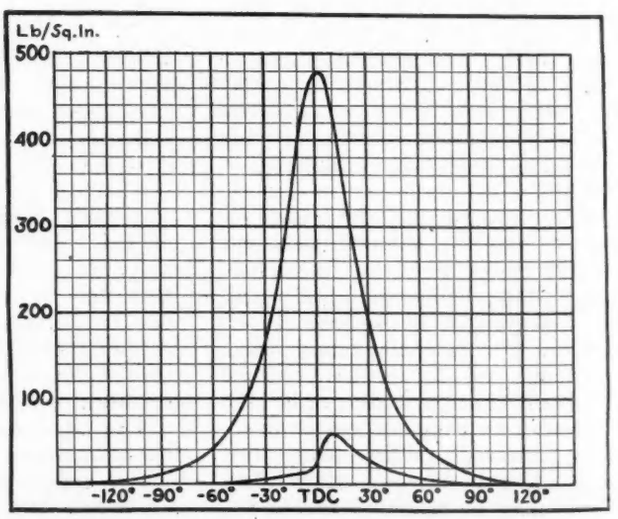
The difference in the behavior of the two types of engine at idling speeds is due, of course, principally to the fact that whereas when a gasoline engine is idling, both the fuel and the air supply are cut down in quantity, and the compression and explosion pressure both are reduced thereby, in a Diesel only the fuel supply is cut down. The amount of air taken into the cylinders is even greater at low than at normal speed, and the only factors that tend to decrease the compression pressure at low speed are increased heat loss and increased gas leakage, both due to the longer time of a cycle at low speed. The compression in a Diesel engine when idling must be sufficiently high to insure ignition, and in view of the fact that more of the heat generated by compression escapes through the walls at low speed, the compression pressure cannot well be much below 450 lb. per sq. in. Now, to turn the engine over against such a compression requires a heavy torque, and immediately the dead center is passed the resisting torque vanishes and is replaced by an even greater driving torque, due to the expansion of the burning gases, hence the effective torque varies within wide limits.

When a spark-ignition engine is idling its compression pressure is only some 15 to 20 lb. per sq. in. above atmospheric, and the maximum combustion pressure about three or four times as great. Pressure conditions in the cylinders of Diesel end spark-ignition engines during the compression and expansion strokes are compared in Fig. 1.

The direct cause of most of the vibration of the truck chassis and cab when the engine is idling is the fluctuation of the crankshaft torque. To minimize these vibrations the engine must be built with a considerable number of cylinders, which reduces individual impulses and brings successive ones down together. However, undue increase in the number of cylinders is objectionable in both types, in that it increases the cost of manufacture, and in the case of the Diesel there are several additional objections. An increase in cylinder number naturally goes together with a decrease in cylinder volume, and the smaller cylinder has a larger wall area per unit of volume and therefore allows the heat of compression to escape more readily, making it more difficult to produce the high temperature required for self-ignition; secondly, the smaller cylinders call for a smaller fuel charge per cycle, which adds to the difficulties of metering. Finally, with an increase in cylinder number the crankshaft becomes longer and more flexible, and therefore more subject to torsional vibration. The Diesel engine is naturally more prone to give trouble from torsional vibration, because of its much higher combustion pressure, and as the latter is a factor on which its power and thermal efficiency are dependent, relief from torsional vibration must be sought in short and rigid shafts.

Regardless of any smoothing of the torque curve that may be accomplished by such means as increasing the number of cylinders, it is obvious that the Diesel engine must always vibrate much more than the spark-ignition engine while idling. If the vibration-inducing forces cannot be eliminated themselves, the next best thing to do would seem to be to eliminate their unpleasant effects, as by a mounting with cushioning against torsional impulses.

The greater proneness of the Diesel engine to torsional vibration is due to the higher combustion pressures in that engine, which may exceed 1000 lb. per sq. in., while in the spark-ignition engine of the heavy-duty type, with moderate compression ratio, they rarely exceed 400 lb. per sq. in. The harmonics which are the direct cause of torsional vibration are more or less proportional to the maximum combustion pressure, as is obvious from the fact that for any given crank angle the actual gas pressure is equal to the algebraic sum of the different harmonics of the gas pressure. For this same reason some of the higher harmonics which are harmless in the gasoline engine because of their small amplitudes may



Comparison of pressure conditions in Diesel and spark ignition engines

become troublesome in the Diesel engine. In view of the fact that practically all passenger-car engines with six and more cylinders are now equipped with vibration dampers, these fittings will no doubt be required on all high-speed Diesel engines with at least six cylinders, especially since Diesel engine speeds have been creeping up continuously in recent years.

Another difficulty about which users of automotive Diesel engines have complained is that of starting. In American practice, at least, electric starters will be used for the most part, and these starters and the batteries supplying them with current must be much larger than those successfully used for comparable gasoline engines. This is due partly to the fact that the Diesel must be turned over against a much higher compression pressure and partly to the fact that it usually has a much heavier flywheel, and, therefore, a much greater polar moment of inertia. In some engines the starting difficulty is solved by decompressing the engine while cranking it; in others, in which the flow of air into the combustion chamber is controlled by the pistons, this cannot be so readily done. Perhaps in that case an inertia starter somewhat similar to those used for aircraft engines would do the trick. Owing to the heavy flywheel required by Diesel engines the latter could not be brought up to speed so rapidly as an aircraft engine, and the stress on the safety clutch of the starter would no doubt be greater, but this could be provided for by suitable design.

The Deutz Motor Company exhibited at the Leipzig Spring Fair a Diesel-engined tractor equipped with a "flywheel starter with reduction gear." This apparently is an inertia starter.

How Casting Conditions Affect Cast Iron

THE effect of maximum heating temperature on the physical properties of cast iron has been investigated at the Bureau of Standards. The strength of cast iron is known to be a function of the amount and distribution of the graphite present, and also of the structure of the groundmass. Maximum strength is to be expected from an iron with small globular graphite flakes in a pearlitic or sorbitic matrix. These conditions are largely controlled by composition, melting practice, and heat treatment of the casting, as has been found by many investigators. It was the object of the present investigation to study the relation between maximum heating temperatures and physical properties, including the running quality and shrinkage of different types of commercial cast irons.

Three Types Studied

Three types of cast iron were studied. Four heats, all melted in a high-frequency induction furnace, were made for each type iron with maximum heating temperatures of the liquid metal at 2550 deg., 2750 deg., 2910 deg., and 3090 deg. Fahr., respectively. Four duplicate transverse test bars of different diameters were cast from each heat in a dry sand mold and the following properties determined: transverse breaking load, deflection, modulus of rupture and modulus of elasticity, hardness, density, and microstructure. The shrinkage and the running qualities of the irons were also investigated.

The transverse breaking strength for each iron changed with maximum temperature to which the liquid iron had been heated and, for two classes of iron, the highest strength for bars of each size was obtained at a different maximum temperature of the liquid metal. In general, the density of the solid metal and the linear contraction increased with an increase in heating temperature of the liquid metal, whereas the density in the liquid state was not affected. The running quality of the irons investigated was apparently not affected by the maximum heating temperature, but was found to be a function of the liquidus temperature, being inversely proportional to the solidification range.

The microstructure of the 1.2-inch bars indicated that irons of highest strength were associated with relatively small graphite flakes and a pearlitic-sorbitic matrix.

Oval Pins May Crack Rod Bearings

A CORRESPONDENT in a British contemporary, referring to Ricardo's statement that a good many manufacturers of high-speed Diesel engines are having trouble from cracking of the babbitt in the connecting-rod big ends, expresses the view that this may be due to out-of-roundness of the crankpins. He cites a case of a low-speed engine in which the big-end bearings heated up chronically to such a degree that the babbitt softened and flowed slightly. It was found that the crankpins were of elliptical section, the longer diameter being horizontal when the crank was in the dead center position. There was a difference of 0.004 in. between the two diameters on a pin of 8 in. diameter. The trouble was cured by fitting the big end to the crankpin in the dead center position, so that there would be uniform distribution of the bearing load when the latter was a maximum.

What Pomeroy Says About Supercharging

A SERIES of pamphlets on the general subject of High-Density Induction, in other words, Supercharging, have been written by Laurence Pomeroy, Jr., and are being published by M. A. McEvoy, Derby, England, which firm specializes in Zoller superchargers. In the first of the pamphlets the author states that supercharging is applied to a car mainly to produce high performance, and he is quite explicit with regard to what he means by high performance, defining it as top-gear acceleration from 10 to 60 m.p.h. at an average rate of 2.4 ft. p.s.p.s., or acceleration from 10 to 60 m.p.h. approximately 30 seconds. This acceleration is usually associated with American and the more powerful British cars. During the past few years, it seems, many motorists in England who previously drove large cars have gone in for cars of lower horsepower, and they feel keenly the reduced top-gear performance of these small cars. Supercharging is advocated as a means of boosting the performance of these small cars.

12 Pamphlets Scheduled

A total of twelve of these pamphlets are scheduled. The first three of which copies have been received, deal with the following topics: The Commercial Value of High Performance, The Effect of High-Density Induction on Road Performance, and The Development of the Compressor as a Component. The pamphlets which are written in a very readable style, will appear monthly.

June U. S. Retail Car Sales Beat Last Year by $7,000,000

In first half industry's domestic sales were up 3% in units but down 12.5% in dollar volume

U. S. Registrations of New Passenger Cars and Estimated Dollar Volume by Manufacturing Groups—First Six Months of 1933 and 1932

	Units					Estimated Dollar Volume				
	1933	1932	Per Cent of Total 1933	Per Cent of Total 1932	Per Cent Change	1933	1932	Per Cent of Total 1933	Per Cent of Total 1932	Change Per Cent
Chevrolet, Ford and Plymouth	461,945	396,458	67.7	59.8	+16.7	$254,000,000	$233,000,000	55.7	44.6	+9.0
Others under $750	115,365	51,106	16.9	7.7	+125.5					
$750-$1,000	52,992	122,935	7.8	18.6	—56.9	75,000,000	35,000,000	16.4	6.7	+114.0
$1,000-$1,500	33,264	55,493	4.9	8.4	—40.2	46,000,000	107,000,000	10.1	20.5	—57.0
$1,500-$2,000	7,944	18,894	1.2	2.9	—58.0	39,000,000	67,000,000	8.5	12.8	—40.8
$2,000-$3,000	6,915	12,256	1.0	1.8	—43.6	13,000,000	31,000,000	2.8	5.9	—58.0
$3,000 and over	3,168	5,091	0.5	0.8	—37.7	17,000,000	31,000,000	3.7	5.9	—45.1
						13,000,000	19,000,000	2.8	3.6	—31.5
Total	681,593	662,233	100.0	100.0	+3.0	$457,000,000	$523,000,000	100.0	100.0	—12.5
Miscellaneous	774	1,392								
Total	682,367	663,625								

U. S. Registrations of New Passenger Cars and Estimated Dollar Volume by Price Classes—June, 1933, and 1932

	Units					Estimated Dollar Volume				
	1933	1932	Per Cent of Total 1932	Per Cent of Total 1933	Per Cent Change	1933	1932	Per Cent of Total 1933	Per Cent of Total 1932	Per Cent Change
Chevrolet, Ford and Plymouth	119,086	107,102	68.4	72.1	+11.2	$66,000,000	$63,000,000	57.9	58.9	+ 4.8
Others under $750	31,010	8,764	17.8	5.9	+254.0					
$750-$1,000	12,933	20,523	7.4	13.8	—37.0	20,000,000	6,000,000	17.5	5.6	+233.0
$1,000-$1,500	7,480	7,223	4.3	4.9	+ 3.5	11,000,000	18,000,000	9.6	16.9	—38.9
$1,500-$2,000	1,347	2,578	0.8	1.7	—47.7	9,000,000	9,000,000	7.9	8.4	none
$2,000-$3,000	1,714	1,611	1.0	1.1	+ 6.3	2,000,000	4,000,000	1.8	3.7	—50.0
$3,000 and over	547	735	0.3	0.5	—25.5	4,000,000	4,000,000	3.5	3.7	none
						2,000,000	3,000,000	1.8	2.8	—33.3
Total	174,117	148,536	100.0	100.0	+17.3	114,000,000	107,000,000	100.0	100.0	+ 6.5
Miscellaneous	73	216								
Total	174,190	148,752								
May, 1933	160,129					$105,000,000				

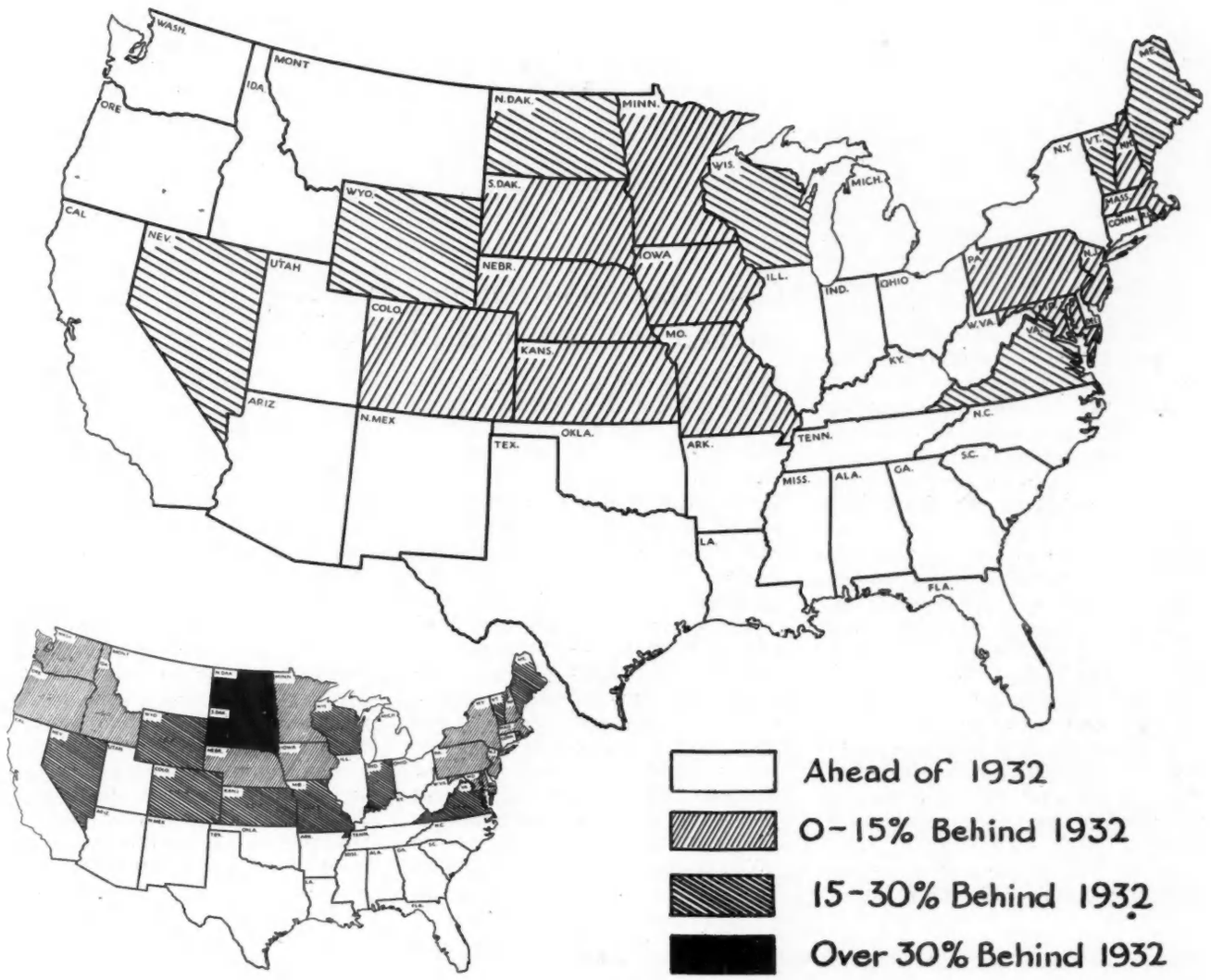
U. S. New Car Registrations and Estimated Dollar Volume by Manufacturing Groups—First Six Months 1933 and 1932

	Percentage of Total Units		Percentage of Total Estimated Dollar Volume	
	1933	1932	1933	1932
Chrysler Corp.	22.8	17.7	17.1	13.4
Ford and Lincoln	19.5	17.5	20.8	17.6
General Motors	46.9	46.9	47.2	45.1
All Others	10.8	17.9	14.9	23.9
	100.0	100.0	100.0	100.0

Note:—In arriving at the estimates of dollar volume, sales of each chassis model were multiplied by the list price of the standard four-door sedan.

Car Sales Ahead of Last Year in 29 States in the First Half

As the smaller map shows, only 23 States were above 1932 at the end of the first five months



Passenger Car Sales in the First Six Months of 1933 and 1932 Compared

(Per cent gains and losses in 1933 from 1932)

Alabama	+14.6	Iowa	— 5.5	Nevada	—28.5	S. Dakota	—12.9
Arizona	+23.0	Kansas	—10.3	New Hampshire	— 7.8	Tennessee	+30.2
Arkansas	+44.2	Kentucky	+20.1	New Jersey	— 5.0	Texas	+37.5
California	+14.3	Louisiana	+16.4	New Mexico	+21.7	Utah	+31.6
Colorado	—11.0	Maine	—22.5	New York	+ 1.2	Vermont	—27.5
Connecticut	+ 5.5	Maryland	—14.6	N. Carolina	+35.1	Virginia	—18.1
Delaware	+ 5.4	Massachusetts	— 2.1	N. Dakota	—25.9	Washington	+ 4.7
Dist. of Col.	— 6.4	Michigan	+ 7.0	Ohio	+13.2	West Virginia	+ 1.1
Florida	+18.0	Minnesota	— 3.3	Oklahoma	+ 1.9	Wisconsin	—23.5
Georgia	+26.9	Mississippi	+27.6	Oregon	+ 5.0	Wyoming	—15.8
Idaho	+ 4.2	Missouri	—13.1	Pennsylvania	— 6.0		
Illinois	+ 3.2	Montana	+16.2	Rhode Island	+ 2.5	Total	+ 3.0
Indiana	+ 1.6	Nebraska	— 6.1	S. Carolina	+37.0		

White Offers New "K" Series Trucks to Meet Axle Load Laws

THE White Co. is now offering modifications of standard models to meet highway legislation requirements in many states. These are to be known as the "K" series, and are available on White models 612, 618, 630, 631, 640, and 641. They are designed to shift more of the weight of payload and body on the front axle, than with the standard models *of same wheelbase*, and in this way can carry the total gross weight legally permitted without violating the axle-load regulations.

With the standard models the front tires are usually *under* loaded while very often the rear tires are *over* loaded. The "K" series permits better distribution of weight by throwing sufficiently more weight on the front axle to utilize the capacity of the front tires.

The "K" models corresponding to the 630, 631, 640, 641, have the back of the cab moved closer to the front axle, by bringing the engine through the dash. To compensate for the heavier load carried by the front tires, a heavier front axle is used, heavier front springs, heavier steering gear, and the frame is reinforced. The dash is insulated and positive air circulation is provided between the back of the engine and the dash, eliminating the accumulation of heat from the engine, thus preventing the cab from overheating. Actual tests are said to show that the temperature inside the cab is little greater than the air outside.

In the "K" models corresponding to White models 612 and 618, the back of the cab is moved closer to the front axle by moving the axle rearward relative to the engine, *and* by bringing the engine through the dash. Heavier front springs are provided to care for the heavier load on front tires.

There is much misunderstanding as to the gain to be had by moving the front axle back, relative to the radiator. On the "K" series the back of the cab is set forward (relative to engine). Moving the front axle still farther back does *not reduce the overall* length and shifts only a few pounds of the total weight to the front axle.

The construction of the new models, to meet these operating requirements, is said to have the following advantages:

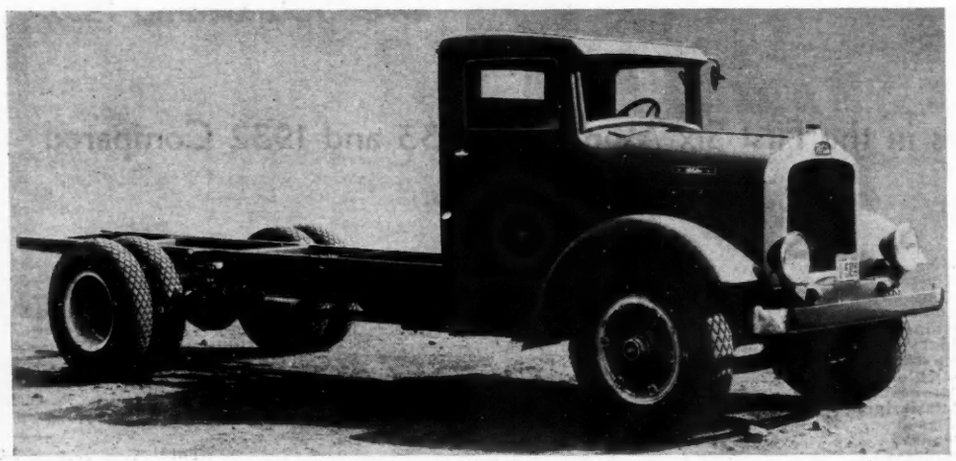
1. Good maintenance accessibility is retained.
2. Attractive (convention) appearance has been retained.
3. Design such that standard truck or tractor of these models, now in service, can be converted at nominal cost, i.e., operators with a number of White trucks in their fleets can get full benefit of White-planned engineering.

Gas Absorption During Welding Studied in Controlled Atmosphere

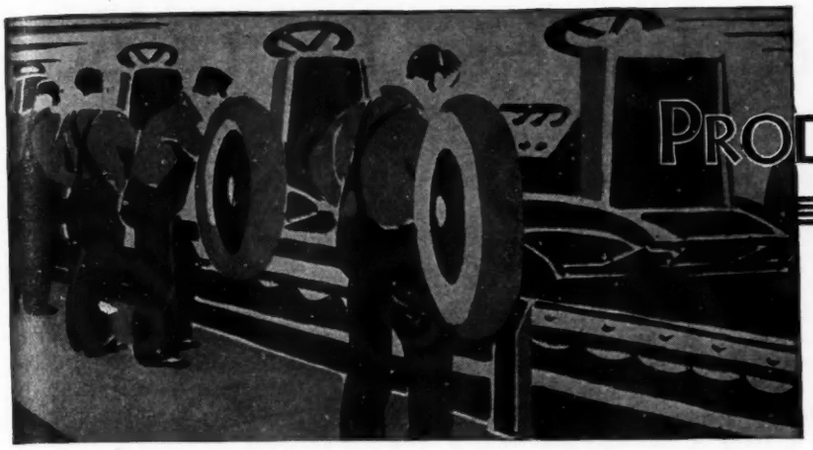
BECAUSE the amount of gas absorption during welding has a vital effect upon the finished weld, the research laboratories of the Westinghouse Electric & Mfg. Co. is studying the problem with the aid of a special welding hood in which the atmosphere may be controlled. In it the weld pads can be prepared under any atmosphere.

At welding temperatures the solubility of metals for gases is generally increased. After the metal cools, some of the previously dissolved gases are given off and cause blow holes. Other gases are not liberated but remain in solid solution. These affect the properties of the weld material considerably.

With high-grade coated electrodes the oxygen content near the arc is very low, but the nitrogen content is over 90 per cent. However, the nitrogen absorption of the deposited metal is smaller with the higher nitrogen contents in the atmosphere. With the use of the welding hood this strange phenomenon of lower nitrogen absorption in an atmosphere of 98 per cent nitrogen as compared with the nitrogen absorption in air was confirmed. This result is of great importance to the welding industry because it discloses some of the mechanism of absorption by weld metal. It shows that molecular nitrogen is hardly dissociated at iron-arc temperatures. It must, therefore, be assumed that nitrogen is absorbed by the weld metal in the form of an active nitrogen-oxygen compound.



One of the "K" series White trucks designed to carry maximum legal loads without exceeding axle load limits



PRODUCTION LINES

Worm Hob

John Holroyd & Co., of England, claims to have made a great stride in worm wheel cutting through the introduction of a novel hob, recently patented. The cutter is said to produce correct tooth form for its entire useful life. It is said to be simple to make and can be profile-ground with a large diameter abrasive wheel. Cutter teeth have constant relief at all parts of the profile. The hob is completely described in *The Automobile Engineer* (Eng.) July, 1933.

Now Out

Those who inquired some time ago about the new inch-millimeter conversion tables will be interested to learn that the ASA has just published a bulletin on the subject. Ask for the American Standard Practice for Inch-Millimeter Conversion for Industrial Use (B48.1-1933.) Copies are available at 20 cents each.

Bookshelf

Ryerson has just issued a combination stock list and handbook on alloy steels, tool steels, special grades, and non-ferrous materials. It is replete with engineering data and tables. Completely cross-indexed and featuring a thumb index. Fine stuff for your desk library.

Alloy Data

Driver-Harris has just completed a treatise, R-33, on its metals and alloys which are used for mechanical, electrical and chemical purposes. Here is brand new handbook stuff including a section on radio alloys. The booklet is replete with useful tables, charts, etc. Designers and metallurgists will find this handbook of more than passing interest. D-H makes a charge of 25 cents per copy.

Stops in Second

In the interest of safety, Westinghouse is demonstrating at the Century of Progress a 300 hp. synchronous motor which can be stopped in one second from full speed ahead. The principle is of untold value in certain places such as a rubber mill for example.

Page Winchell

A peep-hole light to facilitate trouble-shooting on equipment to be repaired or inspected has been developed by Westinghouse. The miniature spotlight is constructed from an ordinary fountain pen type flashlight and is attached to a flexible cord suspended from an arm located in a convenient position over the bench. It's far superior to the ordinary extension light because you can get into small spaces. When not in use, it can be swung out of the way. Just the thing for the tool room, experimental department and maintenance.

Better Cooling

In the interest of cleaner and more efficient cooling systems, the National Carbon Co. has prepared a talkie film that tells the whole story. It contains the experience gained from an extensive research program and suggests, in addition, the profit possibilities of the new service. Dealers and service men will be exposed to this educational talkie under the expert guidance of a "cooling system expert."

Grinders in Chicago

Landis Tool Co. invites you, and you, and you, to drop in on their Chicago demonstration on your next visit to the Windy City. Two recently developed machines are performing under power under the tender care of a special demonstrator who is prepared to put them through their paces. One of the machines is a 6x18 Type C plain hydraulic-equipped grinder with a new Landis sizing device. The general exhibit includes a display of parts such as are being ground on the Landis line. If you plan to take in the International Engineering Congress take some time off for Landis.

Truck Regulation

Somewhat off the beaten path of this department but certainly of interest to executives is a new addition to "The Reference Shelf Library" published by the H. W. Wilson Co. It's a little volume called "Federal Regulation of Motor Transport" and consists in the main of excerpts from recent literature on the subject. While it purports to give both negative and affirmative sides, depending on what side you're on, the motor truck executive can get a good look at the railroad's side of the argument. A selected, but brief, bibliography is appended. The price of a copy is 90 cents.

Salvages Reamers

Broken expansion reamers can be repaired by welding and put back into service for only about 40 cents. So says *Oxy-Acetylene Tips*, August, 1933, wherein is described a simple method of doing the job with a blow torch and special bronze welding rod.

—J. G.

MANUFACTURING MANAGEMENT METALLURGY

Thornton Tandem Drive for Light Trucks

THORNTON TANDEM COMPANY, Detroit, Mich., is announcing to the trade their entry into the six wheel unit field with a two-ratio four wheel drive axle assembly for light trucks.

The unit consists of two standard production axles, a two speed transfer case, with two trains of helical gears, between the axles, two constant velocity high angularity universal joints (needle bearing high angularity joints available at slight reduction in price) between the transfer case and the axles, helical cut gears throughout in the transfer case, dual chrome alloy springs on each side, pinned to axle brackets and mounted on trunnion brackets supported from the frame at either side.

A third differential (Timken High Traction) is incorporated in the transfer case to distribute driving torque equally to forward and rear axles—at the same time permitting free relative movement of the two axles with respect to each other.

The unit can be applied to practically any type of standard two wheel drive truck design that provides facilities in the rear axle employed to permit its operation in either direction without undue strain.

The course of drive is through the propeller shaft to the top of the transfer case. From here the drive is taken through either train of helical gears engaged to the output shaft at the bottom of the case. The driven gear in this shaft is mounted on a Timken High traction differential to transfer torque equally to both forward and rear universal joints.

Reduction ratios in the transfer case are 1.176 and 2.023 to one for the respective gear trains. All shafts, etc., are mounted on Timken taper roller bearings. Shifting is by means of a sliding jaw clutch on the transmission main or top shaft, engaging the gears which rotate free on roller bearings on this shaft. The shift of course can be accomplished without bringing the truck to a complete stop, through this provision. An opening for provision of a power take-off unit is provided near the top of the case.

The constant velocity Bradley universal joints have provision for taking end-thrust, and an automatic take-up by means of a spring load. The joints are pre-loaded in assembly. The maximum useful angularity of this joint is said to be approximately 30 deg. which is also stated to be considerably beyond the requirements of the Thornton drive unit.

The transfer case is carried on short torque tubes from brackets attaching to frame side rails. These torque tubes also serve as mountings for the trunnion assemblies at either side, carrying the dual springs.

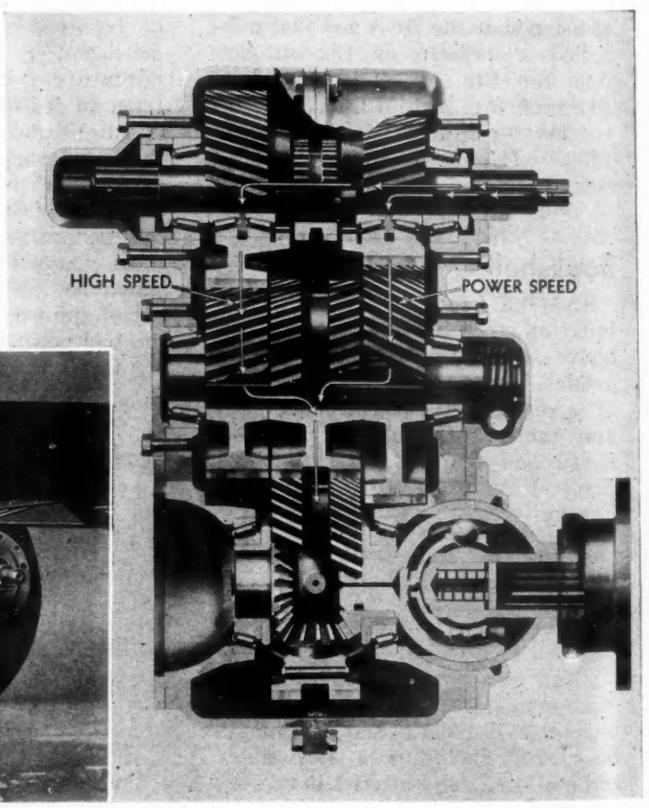
Springs are pin-shackled top and bottom at their outer ends to brackets which in turn are free to rotate about the axle housing. When the unit is attached to a truck frame, gusset plates are provided to obtain the proper frame load distribution. These gusset plates are approximately 7 in. long with 2¾ in. flanges.

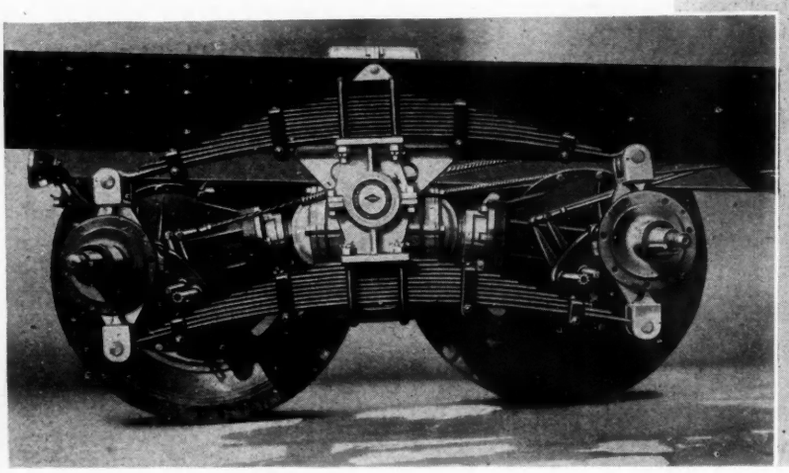
The Thornton company recommends the use of a 157 in. wheelbase truck for conversion to a Thornton drive unit either of 140, 157 or 171 in. wheelbase.

Guesswork Out

Dr. E. E. Free of N.Y.U. writes interestingly in the *Executives Service Bulletin* for July, 1933, anent the matter of taking the guesswork out of inspection. He mentions a few new applications of the phototube for making certain phases of inspection purely automatic. He concludes with the thought-provoking statement that, "The true duty of scientific instruments is not to eliminate the inspector, but merely to eliminate the inspector's guesswork."

At the right is a section through the two speed transfer case and below a view of the installation.





NEW DEVELOPMENTS
Automotive Parts, Accessories and Production Tools

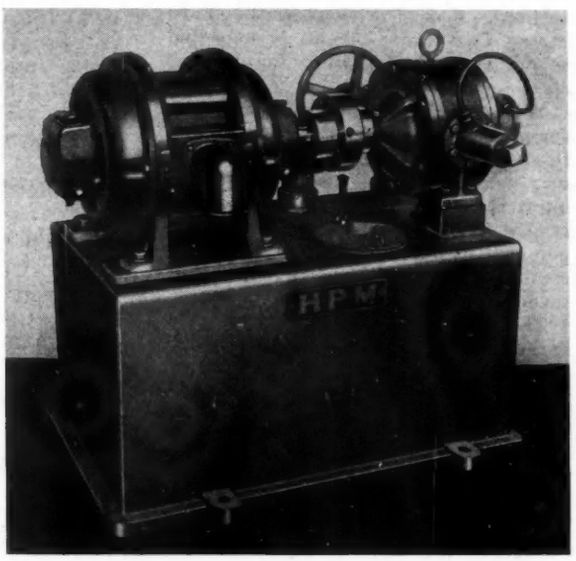
Power Units for Hydraulic Drives

To facilitate the application of the new H-P-M radial oil pressure pumps to various types of hydraulically actuated machines, a line of standardized H-P-M Hydro-Power units has been developed by The Hydraulic Press Mfg. Co., Mount Gilead, Ohio.

Each unit incorporates an H-P-M radial pump pressure generator, direct driven from an electric motor through a flexible coupling. Both pump and motor are mounted on a base made of welded steel plate.

The pressure output of the radial pump is regulated by an automatic control which may be adjusted for any value within the operating limits up to 3000 lb. per sq. in. A modified form of this control is provided with a second adjustment whereby the volume of pump discharge may be regulated to any amount from zero to maximum.

When initial work of closing movements are to be performed at low pressure, a two-stage Hydro-Power Unit is recommended. This incorporates two pressure generating pumps, i.e., the high or medium pressure radial pump as mentioned above, plus a low pressure rotary pump to provide larger volume for the initial portion of the operation.



H-P-M Hydro Power Unit

Removes Odors At Low Cost

Positive odors are said to be removed at low cost from ventilating and air-conditioning systems, industrial systems, and special systems where recirculation may be employed, through the use of the Consolidated Odor Filter which has been placed on the market by the Consolidated Air Conditioning Co., New York.

The filter functions on the principle of the U. S. Army gas mask. This principle consists in passing the contaminated air through a bed of granular activated coconut shell carbon, a form of carbon which is said to have the special property of absorbing and holding all condensable gases and vapors that come in contact with its surface. When the carbon has reached the limit of its absorptive capacity, it is simply reactivated. This activated carbon is said to be a different physical entity from ordinary carbons and from the so-called active carbons widely used for decolorizing and purifying liquids.

The filter is simple in construction, the basic element being the unit cell containing the activated carbon. The number of cells for any particular installations depends on the volume of air to be handled. The cells are mounted in an iron cabinet, and, while the standard cabinet holds only four cells, the company is prepared to build special cabinets to meet specific requirements.

Low Priced Dial Thermometer

C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., announces a new five-in. dial indicating thermometer in a black bakelite case. This instrument was developed for equipment manufacturers who demand a moderately priced dial thermometer that stands up under severe operating conditions.

The new TAG Dial Thermometer has not been cheapened. It is in every respect a first quality, accurate temperature indicator, with an exceptionally powerful moving element or bellows suited to certain commonly used vapor tension ranges between minus 40 and plus 335 deg. F.

Wheel Dressing With Carboloy Tool

Carboloy Company, Inc., Detroit, Mich., announces a new grade—Grade 300—of diamond-impregnated truing tools for finish dressing. With this addition, the line now covers practically the entire range of finish dressing jobs. Each of the grades contains a specific type of diamond with grade 300 having the best quality stones to accommodate the more difficult dressing jobs.

A further development is the subdivision of each grade into three groups based on the mesh size of the diamond particles used. These are classified as follows:

Mesh size of stones	Fine	Medium	Coarse
Grade 100	101	102	103
Grade 200	201	202	203
Grade 300	301	302	303

This choice of mesh sizes considerably increases the range of work which can be done by any one particular grade and in many cases enables the user to successfully apply a lower-priced grade than would be possible were only one mesh size available.

NRA Wants Price Adjustment Provision on Existing Contracts in Automotive Codes

Car Makers Favor No Changes in Prices on Parts for 1933 Models—Hearings on N.A.C.C. Code Set for Aug. 21 Tentatively—Wholesalers Have Conference with Lea

WASHINGTON, D. C.—Hearings on the N.A.C.C. code have been set tentatively for August 21 by Deputy Administrator R. W. Lea. Informal conferences between Chamber representatives and labor, legal, research, consumer and industrial advisors of the NRA also have been scheduled for Aug. 15.

Although both the N.A.C.C. and A.P.E.M. codes have been filed, NRA is desirous that manufacturers in the automotive field sign the President's Reemployment Agreement in order to get things under way immediately. Aside from the fact that signing the President's agreement is voluntary and hence those who signed would place themselves at a disadvantage with those who did not, the principal point at issue is the price policy to be followed on existing contracts after the adoption of the code with its consequent higher costs. On this point, NRA has stated that it wants a clause similar to Section 12 of the President's Reemployment Agreement in both the N.A.C.C. and A.P.E.M. codes. This section reads as follows:

"Where, before June 16, 1933, the undersigned has contracted to purchase goods at a fixed price for delivery during the period of this agreement, the undersigned will make an appropriate adjustment of said fixed price to meet any increase in cost caused by the seller having signed this President's Reemployment Agreement or having become bound by any code of fair competition approved by the President."

The vehicle makers are understood to take the position on this matter that since existing contracts for parts for 1933 models have but a short time to run, it is desirable for both vehicle and parts makers to accept temporarily cost increases resulting from the recovery program. The car makers naturally are desirous of securing as large a volume as possible in the remaining months of the year and feel that this policy on prices is most likely to give it to them. On the other hand, if they have to pay higher prices for future commitments on existing contracts, the increased costs coupled with higher wage and salary scales already generally effective in the car plants, would make a general upping of prices on 1933 models more than a possibility with a consequent probable reduction in volume. They recognize, of course, that price quotations offered them in new parts contracts will be higher in proportion to the increase in costs and that these higher prices as well as the increase

(*Turn to Page* 199, *Please*)

C. W. Nash, president of Nash Motors, appointed industrial advisor to NRA on the automotive code.

NACC Member Output Ahead of All 1932

Gain Over July Last Year Is 204%—7-Month Total Shows 33% Increase

NEW YORK—July production of motor vehicles by members of the National Automobile Chamber of Commerce was 204 per cent above the same month last year according to the Chamber's preliminary estimate. This estimate does not include the Ford Motor Co., whose output is expected to put the industry total for July at close to 235,000.

With a July output of 178,506 passenger cars and trucks, the output for the first seven months of this year was set at 983,683 units. This was more than the output for the entire twelve months last year and was 33 per cent over the output of the same companies for the corresponding seven month period in 1932.

The Chamber estimate, which is based upon reports of factory shipments, includes the operations of all but one major producer in the United States.

Production of Chamber members is summarized below:

July, 1933	178,506
July, 1932	58,771
June, 1933	200,065
7 months, 1933	983,683
7 months, 1932	738,989
Entire year, 1932	977,134

Thompson Earns $144,019

CLEVELAND — Thompson Products, Inc., earned a net profit after charges of $144,019 in the six months ended June 30, contrasted with a net loss of $13,215 in the same period of 1932. In the June quarter net profit after charges was $219,141 against a net loss of $19,301 in the second quarter last year.

Franklin Up 32%

SYRACUSE—July retail Franklin sales were 32 per cent ahead of July last year. The month's total also exceeded June retail business.

As We Go to Press

June installment sales of new cars exceeded June, 1932, by 13½ per cent in units and 12 per cent in dollars; used car time sales, however, were behind last year by 3 per cent in units and 9 per cent in dollars. Wholesale financing was up 30 per cent over a year ago.

* * *

Cord Corp. declares 20 cent dividend.

* * *

Air Transport Code filed by Aeronautical Chamber of Commerce.

* * *

Eaton parts shipment schedules for August show only 4 per cent decline from July contrasted with 40 per cent in 1932. August schedules 140 above last year.

* * *

National Board of American Highway Freight Association will meet in Washington Aug. 23-25 to make final draft of code for for-hire motor carriers.

* * *

Houdaille-Hershey reports net loss after charges, etc., of $32,637 for the six months ended June 30 contrasted with net loss of $99,987 in first half of 1932. Profit in June quarter was $185,798 after same charges.

* * *

J. Howard Muzzy, Chairman of the Board of the Federal-Mogul, died August 9.

WS

Seasonal Influences Expected to Cut August Production to About 195,000

Total for Month Will be More than Double Last Year Despite 19 Per Cent Drop from July—Forthcoming New Model Introductions Cloud Fall Sales Prospect

By Athel F. Denham
Field Editor, Automotive Industries

Production and sales for the industry as a whole seem to have assumed normal seasonal characteristics at the present time. Preliminary estimates on August production based on present schedules show a total of 195,000 to 200,000 units for the industry including Canada. This would be a decline of some 19 per cent under July figures and compares almost exactly with the drop from July to August last year. It represents an increase of more than 100 per cent over last August. Production in week ending Aug. 5 reached new high for year with total of 64,500.

Further July sales reports received provide an indication that total retail deliveries may have dropped slightly more than the 5 per cent estimated last week, although the best sales for the month were recorded in the closing week or ten days as usual.

Sales outlook for the fall is somewhat cloudy by the forthcoming introduction of new models by several car producers during the next 60 days. Such introductions of course will also have considerable effect on production schedules and it is anticipated that a number of car plants will be shut down for change-overs this fall for periods ranging up to two months.

Cadillac for July reported sales 57 per cent ahead of last July.

Oldsmobile retail deliveries were 300 per cent ahead of last July.

Pontiac exceeded last July by 7651 units.

Studebaker reports total sales for July aggregating 3585, representing an increase of 47.5 per cent over last year.

Plymouth August production schedules call for more than 25,000 cars, an increase of 300 per cent over last August.

DeSoto reports that its August production schedule of 3500 cars equaling July is already sold out to dealers. During week ending Aug. 5, 720 DeSoto cars were delivered to owners. Chrysler export reports foreign shipments first six months 41 per cent ahead of last year with Plymouth recording an increase of 133 per cent.

Dodge retail deliveries in the week ending Aug. 5 total 2853 Dodge and 2370 Plymouth passenger cars, and 768 trucks, the last figure being a new peak for the year. Dodge August production schedule calls for roughly 11,000 cars and 3500 trucks.

Chevrolet reports July retail deliveries of 67,820, an increase of 155 per cent over last year.

N. A. D. A. Committee to Draft Code Aug. 16-17

St. Louis Meeting Will Also Determine Administrative Plan

ST. LOUIS—The national emergency committee of the National Automobile Dealers Association will meet in this city at the Hotel Jefferson on Aug. 16 and 17, and possibly also on the 18th. In the call for the meeting issued by President F. W. A. Vesper, he says: "This committee is to consider all codes submitted by the various dealer associations and combine the provisions into one national code. Not only the code itself will be determined at the meeting, but the final policy for the administrative plan to regulate the industry after the code becomes law will be determined on."

The national emergency committee is comprised of the following, the member's name being given first and the alternate second: First District, Harold Hart, Boston, and Myron Kidder, Portland, Me.; Second District, Earl Taber, Hartford, Conn., and A. W. Howard, Providence, R. I.; Third District, Theodore Southworth, Brooklyn, N. Y., and Guy Simons, New York City; Fourth District, E. C. Bull, Buffalo, N. Y.; Fifth District, George McFarland, Harrisburg, Pa., and Adolph Seltz, Philadelphia; Flor-

(*Turn to page 198, please*)

Weaver Asks "How Far?"

DETROIT—"How far do you think each of the following cars will run?" is the question asked in a questionnaire which recipients are asked to return to H. G. Weaver, 3044 W. Grand Boulevard, Detroit. Following the question there is a list of popular low and medium priced cars and spaces for indicating the estimated mileage life. The questionnaire also asks with the assistance of sketches for preferences as to the location of starter and dimmer switch controls.

The questionnaire is a part of the consumer research activities which Mr. Weaver is carrying on for General Motors.

July Sales Only Two Per Cent Under June

DETROIT—Sales of new passenger cars in the United States in July apparently were approximately 63 per cent greater than in July last year, according to R. L. Polk & Co. July sales as estimated were only 2 per cent below those in June, thus far the peak month of the year.

On this basis it was indicated that total new passenger car sales in July in the country were 170,000, which would compare with 104,188 in July, 1932, and 174,190 in June, this year.

Chevrolet 7-Month Output Exceeds All of Last Year

DETROIT—Chevrolet July production nearly trebled the output for the corresponding month last year. The total for the month was 80,250 new cars and trucks, compared with 32,281 built last July and with 81,562 in June this year. The current July was the fourth largest July in the 21-year history of the company.

For the first seven months this year the company produced more than 438,000 new cars and trucks compared with 394,000 for the full 12 months of 1932.

Austin Reports Loss

BUTLER, PA.—American Austin Car Co. reports net loss after charges for the year ended March 31, 1933, of $402,499, compared with a loss of $844,708 for the 15 months ending March 31, 1932.

New Agency for Fisher Body

DETROIT—Erwin, Wasey and Company, New York, has been retained as advertising counsel by Fisher Body Corp. The appointment is effective immediately.

Informed that the Ford Motor Co. has established the 40-hr. week, Recovery Administrator Johnson replied:
"Not enough. Mr. Ford can't get the Blue Eagle on that."

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Bigger Buying Expected

Despite the extremely hot weather lately, general business has continued upward. The gains since the beginning of the upturn have by now reached encouraging proportions. The declines that are usual at this time of year are for the most part absent, although here and there some seasonal recession is evident. Retail trade last week was somewhat below that during the preceding week, but it continued above last year's level. However, consumer buying still lags behind the large gains in wholesale lines and in industrial activity. Heavier purchasing is anticipated as a result of the increases in employment and wages that have already occurred and the betterment along these lines as more and more business units subscribe to the blanket code.

Car Loadings Ahead of '32

Railway freight loadings during the week ended July 29 amounted to 638,396 cars, which marks a decrease of 10,518 cars below those during the preceding week, an increase of 127,293 cars above those a year ago, and a decrease of 123,422 cars below those two years ago.

Production of electricity by the electric light and power industry in the United States during the week ended July 29, was 15.4 per cent above that a year ago. This marks the thirteenth successive week in which electricity output showed an increase above that in the corresponding period last year.

Prices Hold Up-Trend

The index of prices of farm products on July 15 stood at 76, showing a gain of 12 points above that a month earlier and one of 19 points above that a year earlier. The index for grain prices alone showed an increase of 52 points during that twelve-month period. The gain from June 15 to July 15 marks the largest monthly gain in sixteen years.

Professor Fisher's index of wholesale commodity prices during the week ended August 5 stood at 70.6, as against 69.6 the week before and 70.4 two weeks earlier.

Securities Irregular

The stock market last week was irregular, although no definite weakness developed. On Monday there was a sharp break in prices, with losses as large as 10 points in some cases; but a rally later in the day reduced the amount of the declines. There was no definite trend during the remainder of the week. Net price changes varied, with a few more issues showing net losses than net gains. Trading fell off as the week progressed.

The consolidated statement of the Federal Reserve banks for the week ended August 2 showed increases of $3,000,000 in holdings of discounted bills and of $11,000,000 in holdings of Government securities. Holdings of bills bought in the open market declined $2,000,000. The reserve ratio on August 2 stood at 68.4 per cent, the same as in the two weeks preceding.

World Registrations Total 33,568,295

Decrease from 1932 Is 1,695,102 Vehicles

WASHINGTON, D. C.—Of the 33,568,295 automobiles registered throughout the world on Jan. 1, 1933, according to a world census of motor vehicles by A. W. Childs, chief, Automotive Division, Department of Commerce. Comparison of this figure with the preliminary total of 33,395,368 given in the Statistical Issue of *Automotive Industries* reveals a difference of less than 200,000.

World registration during the current year shows a decrease of 1,695,102 units from the 35,263,397 motor vehicles registered at the beginning of 1932. It was pointed out that the recorded decrease in the number of motor vehicles registered does not necessarily mean that ownership decreased by that number of units since it is known that many vehicles were not actually registered and in operation due to economic circumstances.

The total world registration as of Jan. 1, 1933, is shown by the survey to include 27,813,201 passenger cars, 358,528 buses and 5,396,566 trucks.

Following the United States with 24,317,020, the first-ranking world countries in the number of motor vehicles registered are shown to be France with 1,845,400; England, 1,385,472; Canada, 1,106,408; Germany, 616,200; Australia, 533,833; Italy, 323,336; Argentina, 307,947; New Zealand, 190,547; Belgium, 182,689, and Spain, 159,200.

At the beginning of the current year the ratio of automobiles to world population was one for every 60 persons compared with one to every five persons in continental United States, the census shows.

Liberia, with one car registered for every 47,170 persons, is shown by the study to have the smallest number of automobiles in ratio to population than any of the 166 geographical subdivisions of the world reported upon in the census.

G. M. Declares 25 Cent Quarterly Dividend

NEW YORK—The directors of General Motors Corporation at their meeting on Aug. 7 declared on the outstanding common stock a quarterly dividend of $.25 a share, payable September 12, 1933, to stockholders of record August 17, 1933.

In addition the regular quarterly dividend of $1.25 a share was declared on the $5 Preferred Stock, payable November 1, 1933, to stockholders of record October 9, 1933.

B-O-P Creates 6 New Sales Zones

Blees Optimistic on Car Market Prospects

DETROIT—W. A. Blees, general sales manager of the Buick-Olds-Pontiac Sales Co., announces the establishment of six new zones and the appointment of six zone managers, as follows: Charlotte, N. C., L. A. Folger; Cleveland, C. P. Brady; Indianapolis, O. F. Wampler; Oklahoma City, W. J. Bryan; Lincoln, Neb., C. W. Mellon; and Denver, R. W. Losey. The Oklahoma City zone was established Aug. 1 and the five others will date from Aug. 15. These additions bring the total zone strength of B-O-P to 28 zones, with six branches in addition.

"Addition of the zones," said Mr. Blees, "and the increased personnel incident to their establishment prove better than anything else our feeling about the future. We are amplifying our organization to take full advantage of the growing automobile market. If the plans of the government are successful—and we feel that they will be, even though we may have some disappointments from time to time—there should be a much larger annual market for automobiles. Therefore, we are increasing the scope of the company's operation."

Chrysler Motors Has Best July in History

All Divisions Sell 55,119 Units—Previous High Mark Was 42,000 in July, 1925

DETROIT — Shipments of Plymouth, Dodge, De Soto and Chrysler passenger cars and commercial vehicles during July totaled 55,119 units, nearly five times shipments in the same month of a year ago. This was the greatest July business in the history of Chrysler Motors.

July, this year, was 29 per cent above the best previous July, which was in 1925, when 42,000 units were shipped.

It was also the best July for commercial units produced by Chrysler Motors. During the month a total of 3583 Dodge Brothers trucks were shipped. This was five and one-half times more commercial units than were shipped by the corporation in July of last year.

Total shipments of Plymouth, Dodge, De Soto and Chrysler passenger cars and trucks for the first seven months of this year total 272,888 units. This is 74 per cent ahead of the same period of last year, and already exceeds Chrysler Motors' total 1932 sales by 23 per cent.

Shipments of Dodge Brothers trucks for the past seven months totaled 16,039 units, which is, to date, 50 per cent more than the entire 1932 shipments of commercial vehicles by Chrysler Motors units.

Rim Inspections Gain 22% in Seven Months

CLEVELAND—Rims inspected and approved by the tire and rim association numbered 5,405,661 in the first seven months of 1933, a gain of 22 per cent over the 4,440,942 passed in the corresponding 1932 period. In July, inspections totaled 900,227 as compared with 352,338 a year ago, an increase of 156 per cent.

Will Present Bendix Trophy at S.A.E. Dinner

NEW YORK—The Vincent Bendix Trophy will be presented to Roscoe Turner at the S.A.E. Century of Progress Dinner, Aug. 31. The Bendix Trophy Race, instituted in 1931 by Vincent Bendix, is an international, free-for-all, transcontinental event, permitting the use of experimental (including supercharged) engines and special fuels. Any type of plane or engine may be used.

Roscoe Turner achieved first place in the race this year (National Air Races, Los Angeles, July 1 to 4) in a Wedell-Williams plane, powered by a Pratt & Whitney Wasp Senior supercharged engine, by lowering the New York to Los Angeles time to 11 hr. and 30 min., winning $4,050 in prize money and $1,000 for breaking the record. His speed was 214.78 m.p.h.

J. R. Wedell of Patterson, La., took second place with a Wedell-Williams racer, powered by a Pratt & Whitney Wasp Junior engine. Prize—$2,250. Speed 209.23 m.p.h.

Clark Near Break Even

BUCHANAN, MICH. — Clark Equipment and subsidiaries report June quarter net loss of $11,982, against $200,804 in the June quarter last year, and for the first six months $148,551, against $344,970 in the first half of 1932.

Federal Sales Gain Again in July

DETROIT—July sales of the Federal Motor Truck. Co. registered the fourth consecutive monthly gain over the preceding thirty-day period, according to an announcement made today by J. F. Bowman, vice-president in charge of sales.

Wayne County Car Sales Up 65% from Last July

DETROIT—Wayne County passenger car registrations during July totaled 5807 against 7344 in June and 3508 for last July. Ford total of 2204 was down 351 from June, but slightly over total for July last year. Chevrolet totaled 1156, down 169 from June. Plymouth registered 649.

Continental, Hudson and Willys were the only makes showing increases over June, while increases over July last year were rather general.

Commercial registrations were 360, just two units over June and 212 units above last July. Ford totaled 151, Chevrolet 85 and Dodge 61.

Auto-Lite Earnings

TOLEDO—Electric Auto-Lite Co. reports net profit after charges of $316,012 in the June quarter compared with $1,098,514 last year. For the first half, net profit was $561,622 as compared with $1,649,348 in the first six months of 1932.

N.I.R.A. Endorses Plant Modernization

"ONE thing I have noticed with considerable surprise and dismay. That is, the attitude of so many business men who are writing into their codes a degree of control and regulation of their affairs which would lead one to believe that they are glad to turn over to the Administration the responsibility for the operation of their business.

"I have seen suggested codes in which industries have agreed not to purchase any new equipment without a certificate of approval from the President of the United States. I have seen other clauses almost as ridiculous, which would place a premium on high-cost manufacturing and which would effect a moratorium on plant modernization, so important in our economic life.

"While it is necessary in some cases to control increased plant capacity, it is economically unsound to generally discourage the purchase of new and modern machinery. The building of new power plants, transmission lines, modern factories, providing for more efficient lay-out of processes and similar installation of capital goods, will help materially in preventing too great a rise in prices to the consumer. Further, it will stimulate employment throughout the highly important capital goods industries which is the worst spot in our unemployment situation today."

* * * * *

"Old market evaluations, old methods of distribution and old advertising policies are OUT. The New Deal may be accepted as a catch phrase. It is not. It means new consumers, new trading areas, new merchandising methods. It means specifically that advertising as a great and constructive force in merchandising should at last come into its own. You and I well know that the price-cutter was the biggest builder of profitless prosperity. He was the foe of sound, constructive advertising. All this should change, if goods and services are to be sold on a basis of quality. As I have said before, it offers a challenge to the best of our business, our merchandising and our advertising talent."
—From a speech before the N. Y. Advertising Clubs by Malcolm Muir, Deputy Administrator, N.I.R.A.

Coordination of Rail and Bus Regulation Held Essential in Code Filed by Bus Group

Rate, Certificate and Insurance Regulation Provided in Code—Charging Less Than Established Rates Made Unfair Competition—Minimum Weekly Wage Set at $15

WASHINGTON, D. C.—Coordination of railway and bus regulation is urged in the code of fair competition filed with NIRA by the National Association of Motor Bus Operators. In addition to wage and hour provisions, the code provides for substantially all the forms of regulation which the bus operators have favored for years in their efforts to get Congress to pass a law regulating interstate bus carriers.

"It has been authoritatively declared," the code says, "that steam railroad passenger transportation is not subject to the control of the National Recovery Administration. Coordination of the regulation of steam railroad passenger transportation with the purposes of the declared policy of the National Industrial Recovery Act must be accomplished to enable the effective administration of this code." Just how the regulatory actions of the NIRA and the ICC can be coordinated obviously presents administrative and legal problems of substantial proportions, for which the code offers no solution.

The code provides that all existing bus operators be licensed as a matter of course, but that new licenses or extensions of existing licenses should be granted only upon a sufficient showing of convenience and necessity as defined by the State or States in which the new operation is proposed. It is also provided that rates shall be just and reasonable, and that within 30 days of the effective date a national schedule of tariffs shall be filed. Provision is made for filing amendments or supplements to meet special conditions. Charging less than the tariffs filed is prohibited.

All carriers will be required to comply with "the lawful regulations of the States through which they operate pertaining to bonds or insurance required for passenger motor carriers in intrastate commerce." Commissions on ticket sales are limited to 10 per cent.

Minimum wages are set at $15 weekly with porters, cleaners, apprentices and part-time employees excepted. For clerical employees, exclusive of transportation service men, an average for the year of 40 hours per week maximum is established and for maintenance employees and transportation service men an average maximum of 48 hours per week. Supervisors, porters, watchmen, baggage checkers and janitors, are not to be subject to maximum hour regulation. An additional extension of not to exceed six hours per week for any six-month period above the maximum hours of labor for maintenance employees and transportation service men, is provided for.

Administration will be by the National Motor Bus Code Committee to be appointed by the bus association with the approval of the President.

N.A.D.A. to Draft Code

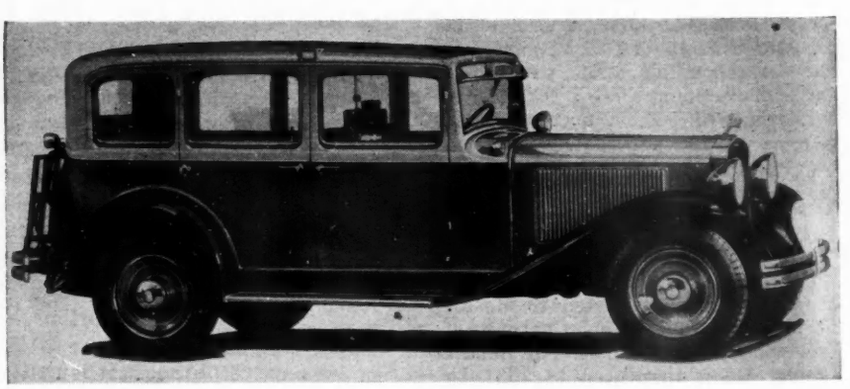
(*Continued from page 195*)

ida, Claude Nolan, Jacksonville; Seventh District, John E. Smith, Atlanta, Ga., and James H. Frazer, Nashville, Tenn.; Eighth District, Chas. L. Day, Pittsburgh, Pa., and J. S. Calhoun, Charleston, W. Va.; Ninth District, Herbert Buckman, Cleveland; Eleventh District, Clarence L. Holt, Minneapolis; Twelfth District, Frank H. Bogda, Green Bay, Wis., and Ralph A. Hult, Madison, Wis.; Thirteenth District, Aaron DeRoy, Detroit; Fourteenth District, C. J. Meyers, Oklahoma City, and Hal Brace, Kansas City; Fifteenth District—Southern Illinois, Hermah Wangelin, Belleville, and William McKenzie, Springfield, Ill.; Northern Illinois, Lafayette Markle, Chicago; Seventeenth District, J. A. Peverill, Des Moines, Ia.; Eastern Missouri, F. W. A. Vesper, St. Louis, and Allen C. Garner, Poplar Bluff; Nineteenth District, Ellis Boyd, Ft. Worth, Tex.; Twenty-Second District, Floris Naglevoort, Seattle, and A. S. Eldridge, Seattle; Twenty-Third District, Tom Botterill, Denver, and H. D. MacDonald, Colorado Springs; Twenty-Fourth District, Roy Burnett, Portland, Ore.; Twenty-Fifth District, Eugene B. Smith, Greenville, S. C. and W. E. Rush, Greenville, S. C.

A.M.A. Offers Used Car Services to N. A. D. A.

DETROIT — Automobile Market Analysis, Inc., which is now publishing used car guide books for 12 different areas, which are used extensively by Ford dealers in connection with the Unisales Co., has offered its facilities to the National Automobile Dealers Association for the publication of district guide books which probably will be required in the administration of the association's code of fair competition. The proposal provides that guide books be issued monthly in each district, the annual subscription price to the dealer to be $18. Of this sum, half would be divided among the national, state and local associations subscribing to the code. The other half would be used to cover the cost of the guide book. Profits would accrue to A. M. A. only after code administrative and publishing costs had been covered. Control and supervision of A. M. A. operations would be vested in the N. A. D. A.

New Dodge DeLuxe Taxicab



DETROIT—Dodge Bros. is now offering a new DeLuxe taxicab with a mono-piece steel body. It is equipped with a special 6-cylinder, L-head engine, 3¼ in. bore x 4¼ in. stroke, developing a maximum output of 74 hp. Drive is through a single-disc plate clutch and a 3-speed, silent-second transmission.

The doors, hinged forward in front and rearward in the back, are exceptionally large, giving ample head room. Seats are upholstered in genuine leather. Rear arm rests are cushioned with sponge rubber. Two forward - folding leather - upholstered extra seats are provided; they are placed so as to afford plenty of knee room to occupants of the rear seats.

Equipment includes Duplate glass all around; extra heavy duty bumpers; and a hot water heater. Another useful item of equipment is a trunk rack which takes care of luggage.

General Motors Sales Exceed 1932 Full Year Total at End of First Seven Months

U. S. Dealer Stocks Increase 5248 in July, Making Total Expansion of 33,246 Since Jan. 1—Volume is 40% Ahead of 1932 for First Seven Months of Year

NEW YORK—General Motors sales of cars and trucks in July reached the second highest totals attained in any month in two years, being exceeded only by volume in June, 1933.

At the end of seven months General Motors had sold approximately 47,000 more units to its dealers in the United States and about 43,000 more units to its world dealer organization, than in all of 1932. Domestic retail sales at the end of seven months were only about 23,000 behind the total for all of last year.

Retail sales in the United States in July totaled 87,298, a gain of 166 per cent over the 32,849 sold in July, 1932, but a loss of 5½ per cent from the 92,546 delivered in June, 1933.

Sales to U. S. dealers also declined from 99,956 in June to 92,546 in July, but were nearly three times the 31,096 sold to dealers in July, 1932. Total sales to dealers including Canada and overseas in July amounted to 106,918 as compared with 36,872 a year ago and 113,701 in June.

The domestic figures reveal an increase of 5248 units in dealer stocks during July and a total increase in dealer stocks since Jan. 1, 1933, of 33,246.

A summary of the corporation's monthly sales report follows:

	July, 1933	July, 1932	June, 1933	Seven Months 1933	Seven Months 1932
Sales to U. S. consumers	87,298	32,849	101,827	487,062	378,423
Sales to U. S. dealers..	92,546	31,096	99,956	520,308	372,847
Sales to dealers including Canada and Overseas.	106,918	36,872	113,701	605,540	431,787

Higher Prices Slow Steel Commitments

Inter-District Competition Is Becoming More Intense

NEW YORK—The rate at which steel is being shipped to automotive consumers, while in the case of a number of products and most mills slightly lower than in recent weeks, holds up considerably better than is generally expected by the steel industry toward mid-August. A good deal of this steel carries prices below those at which new business can be placed, and this makes for a somewhat slower pace in the rate at which new commitments are coming out.

Steel, at higher prices than those at which incoming shipments are billed, is usually ordered at the very last moment before it is urgently needed. Automotive purchasing agents, moreover, are keeping their eyes close to the week-to-week production schedules of their own plants and seek to avoid stocking of surplus material.

While there is a good deal of talk in the market that some of the tonnage buyers are showing resistance to the abolition of price concessions they have heretofore enjoyed, it is rather a revival of intensive competition between the steel producers of one district and those of another that is in evidence. There are reports that tonnage buyers in the Chicago market have been accorded Pittsburgh base prices while the smaller consumers continue to pay the Chicago base price which is $2 a ton higher.

The marked disparity of the rate at which steel mill operating rates are easing off in the different districts, while to some extent due to the difference in the demand for certain products, is nevertheless indicative of the fact that some steel districts have fared better in the recent buying movement than have others, just as have individual mills. With the extent of cost increases under the code, which at this writing is still hanging fire, as yet an unknown quantity, automotive consumers are disposed, as much as possible, to mark time in their commitments, but they are far from looking upon steel producers as miracle workers who alone could meet increased costs without raising selling prices.

NRA & Motor Codes

(Continued from page 194)

in their own costs will have to be reflected in prices on 1934 models.

On the other hand, the parts makers have been operating on exceedingly small profit margins, if any, and while some of them are well-heeled with cash, there are many who are not. Consequently, it is obvious why they should show some reluctance in assuming the increased costs of the recovery program without evidence that the car makers would arbitrate price increases on existing contracts. Moreover, without provision for price arbitration in the N.A.C.C. code, the inclusion of such a provision in the parts code would enable producers supplying parts makers to increase their prices in proportion to their increase in costs, and the parts maker for the time being would have no sure way of passing these costs on. This would mean on existing contracts that the parts maker would have to absorb higher costs on both materials and labor, something which many are not in a position to do and none want to do.

Another development of the week was the possibility that the automotive parts industry might be included in a general code developed for the metal working industries. Conferences were held in Washington on this subject this week and NRA is studying the matter carefully as it is desirous of holding the number of codes down to the minimum. At the time of going to press, however, opinion here was that due to the size of the automotive parts industry and also because many parts makers do not come under the metal working classification, a separate parts code would be necessary.

Representatives of automotive wholesalers were in conference with Col. Lea on Tuesday as was an N.A.C.C. committee consisting of W. S. Knudsen, K. T. Keller, Harman Weckler, Donaldson Brown, John Thomas Smith and Alfred Reeves. In the discussion with the N.A.C.C. committee, Col. Lea is reported to have asked for more background on several of the provisions in the N.A.C.C. code, particularly with respect to the 48-hour maximum week and exceptions. It is understood, also, that he discussed Section 12 of the President's Reemployment Agreement, indicating that NRA would want some recognition of this principle in the N.A.C.C. code.

Kelsey-Hayes Statement

DETROIT — A net loss after charges of $351,722 was reported by Kelsey-Hayes Wheel Co. for the first 6 months of 1933. This compares with a net loss of $1,029,616 in the first half of 1932. In the quarter ended June 30 net profit after charges was $21,899 contrasted with a net loss of $373,621 in the preceding quarter and $373,083 in second quarter of 1932.

A. F. of L. Organizing Willys Workers

TOLEDO — Indications that nearly a third of Willys-Overland workers are being organized and have applied for a charter as the Union Council of Automotive Workers from the American Federation of Labor was given in Federal Court here late Tuesday when authority for a minimum rate of 60 cents an hour for productive workers was asked.

Under the code adopted and compliance authorized by the court earlier the 41½ cent minimum was applied to all types of workers, it was said.

Truck Owners Meet to Formulate Code

Object Is to Provide Basis for Exceptions to NRA Blanket Code

WASHINGTON, D. C.—Representatives of truck owners from all parts of the country were scheduled to meet here Aug. 10 to draft a temporary and general code covering all classes of truck operators which on approval by the Recovery Administration would provide the basis for exceptions to the President's blanket agreement which operators might make in signing up under the "blue eagle."

The call for the meeting was issued by the Truck Owners' National Emergency Committee consisting in the main of officers of state truck groups. The chairman of this committee is Frank Schmidt of Toledo and Edward F. Loomis is secretary. Associations to which the call was sent were invited to send five representatives including the secretary who may have to handle some of the details of whatever plan is adopted.

The call for the meeting says in part "Truck owners are as willing as any other group of business men in the country to cooperate with the President's Reemployment Program and put more men back to work. Because of long-standing operating conditions in the truck industry, it would be ruinous for many truck owners to comply with all the terms of the President's Reemployment Agreement, including hours of labor. If the Recovery Administration will agree to some plan so that individual exceptions may be permitted, not only will the disruption of truck hauling and of industry dependent upon it be prevented, but a substantial gain for employment effected which may put as many as a quarter of a million men back to work."

"There is no national organization today which is truly representative of all classes of truck owners. Accordingly a group of leaders in truck organization work have conferred with representatives of national organizations whose members own and use trucks, and have decided that an emergency situation exists which can only be met by prompt and thoroughgoing action."

Diamond T Breaks All Time Record in July

CHICAGO—All monthly sales records in the 28-year history of the Diamond T Motor Car Company, Chicago motor truck manufacturers, were shattered in July, E. J. Bush, vice-president announced. Mr. Bush also announced that the company has subscribed to the national recovery act and the N. A. C. C. code.

"Approximately five times as many units were sold during July as were sold in July of 1932. During the first seven months of 1933 we have sold twice as many trucks as we sold during the first seven months of 1932," the vice-president declared.

"Up to July 31 of this year we have sold 400 more trucks than were sold during the entire year 1932."

Mr. Bush forecast excellent results during the month of August, stating "August will be a month of rising prices and buyers will endeavor to cover for their requirements before the prices rise."

Briggs & Stratton Earnings

MILWAUKEE—Briggs & Stratton Corp., reports a net profit after all charges for the three months ended June 30, of $60,309, equal to 20 cents a share on capital stock against two cents a share last year. Net profit for the six months ended June 30, after charges and taxes was $61,633 as compared with $14,044 last year.

Ainsworth Mfg. Profit

DETROIT — Ainsworth Manufacturing Corp. made a net profit of $30,003 for the six months ended June 30, after taxes, depreciation, and other charges, and after deducting non-recurring losses of $21,281. This compares with a net loss of $7,625 for the first half of 1932.

CALENDAR OF COMING EVENTS

SHOWS

Eastern States Exposition, Springfield, Mass. ..... Sept. 17-23
National Metal Exposition, Detroit ..... Oct. 2-6
Joint Trade Show, M.E.M.A., N.S.P.A., M.E.W.A. ..... Oct. 30-Nov. 4
New York Automobile Show, Jan. 6-13, 1934
Chicago Automobile Show, Jan. 27-Feb. 3, 1934

CONVENTIONS

Nat. Assoc. of Motor Bus Operators, Chicago ..... Sept. 21-22
National Metal Congress, Detroit ..... Oct. 2-6

MEETINGS

S.A.E. International Automotive Engineering Congress, Chicago, Aug. 28-Sept. 4
American Chemical Society, Chicago, Sept. 11-15
American Transit Assoc., Chicago, Sept. 18-20
National Petroleum Assn., Annual, Atlantic City ..... Sept. 20-22
Natl. Safety Council, Chicago.... Oct. 2-6
National Metal Congress, Detroit. Oct. 2-6
American Petroleum Institute. Annual, Chicago ..... Oct. 24-26
Commercial Motor and Transport Vehicle Exhibition, London, England ..... Nov. 2-11
International Automobile Salon, Paris, France ..... Oct. 5-16
International Automobile and Motorboat Show, London, England, Oct. 12-21

Airplane Code Has Open-Shop Clause

Unauthorized Use of Patents and Designs Is Prohibited

WASHINGTON, D. C.—An open-shop declaration is one of the features of the code of fair competition filed late last week by the Aeronautical Chamber of Commerce. The code is reported to have the approval of 95 per cent of aircraft production, 98 per cent of aircraft engine production and practically all of the major accessory production.

The minimum wage provisions closely parallel the blanket code requirements. Maximum hours per week, however, are set at 40 for non-executive personnel. The code also prohibits the use of the designs of another without permission. This licensing proviso reads as follows:

"No member of this code shall sell, offer to sell or make aircraft, aircraft engines, aircraft parts and/or accessories from another member's design data, drawings or copies therefrom, whether patented or not, in any competitive way prejudicial to the interests of the original producers thereof unless directly and specifically licensed by the owner thereof so to do; nor shall any such member sell a license to make, have made or sell any such aircraft, aircraft engines, aircraft parts and/or accessories to another without definite and separate agreement in writing providing equitable compensation to such owner directly and specifically for such license."

Aluminum Industries Earnings

CINCINNATI — Aluminum Industries, Inc., reports net income after charges of $62,291 for the six months ended June 30 as contrasted with a deficit of $19,062 for the same period last year. Sales during the six months period just ended amounted to $1,023,449 as compared with $994,940 a year ago.

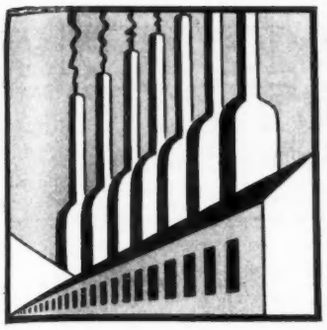
Chrysler Names Greene

DETROIT—Burch E. Greene has been appointed director of advertising and sales promotion of the Chrysler Sales Corp., succeeding Cliff Knoble who resigned recently to conduct his own business. Mr. Greene previously has been connected with the Willys, Chrysler, Oldsmobile and B-O-P organizations.

Campbell, Wyant Earnings

CHICAGO—Campbell, Wyant and Cannon Foundry Co., for the three months ended June 30, reports net income after all charges and federal taxes of $88,123. This compares with net loss of $69,535 in the preceding three months and with net loss of $117,064 in the three months ended June 30, 1932.

For the six months ended June 30 net income amounted to $18,588, compared with a net loss of $140,442 in the same period last year.



LEADING PRODUCTS OF BETHLEHEM

Bars, Bands and Special Sections

Carbon steel bars and bands, Bessemer and open-hearth; special and automotive sections of every description; iron bars, double refined; staybolt and engine bolt quality.

Semi-Finished Steel

Carbon billets and slabs, rerolling and forging quality; sheet bars and skelp.

Alloy Steels

Open-hearth and electric-furnace alloy steels for all purposes, hot-rolled and cold-drawn, rough-turned or ground; MAYARI nickel-chromium steels; MAYARI engine bolt and staybolt steels; RESILIA spring steel; SUPERTEMP, for superior physical properties at high temperatures. Bars, bands, billets and blooms.

Bolts and Nuts — Rivets — Spikes
Pole Line Material

Plain and galvanized bolts; machine, carriage, and special; heat-treated, carbon and alloy; MAYARI steel frog, track and fitting-up bolts; DARDELET self-locking threaded bolts and nuts; staybolts, solid and hollow; hot pressed and cold punched nuts.

Pig Iron

Basic, Bessemer, foundry, low phosphorous, malleable, malleable Bessemer; MAYARI pig iron for making superior alloy-iron castings.

Forgings

Carbon and alloy; hammered and hydraulically pressed; drop and upsetter; seamless vessels for oil refineries; high-pressure seamless boiler drums and chemical vessels.

Castings

Carbon and alloy steel (open hearth and electric), manganese steel, iron, brass and bronze, rough as cast or machined; abrasion-resisting castings. Centrifugal cast bronze sleeves and liners; ingot moulds.

Wheels and Axles

Wrought steel wheels and axles for freight and passenger cars and engine, tender, and trailer trucks; for electric cars; for mine locomotives and mine cars; for cinder, ore and other industrial cars; crane wheels.

Rolled Steel Blanks

For gears and pinions, flywheels, crane wheels. Tire moulds and mould rings, shaft couplings, brake wheels and drums, and other circular forgings.

Trackwork
for Steam, Electric, Mine and Industrial Railways

Frogs, switches, Bethlehem and NEW CENTURY switch stands, crossings, steel ties, gage rods, rail braces, BETHCO rail anchors; silico-manganese and manganese special trackwork; hook flange guard rails, guard rail chairs, compromise joints.

Steel Freight and Passenger Cars
Mine Cars
Oil-Burning Equipment

Bethlehem-Dahl mechanical-atomizing oil burning system for stationary and marine service.

Auxiliary Locomotives
Rails and Accessories

Standard tee, girder, girder-guard and high-tee rails; light rails; splice bars, rail clips, tie plates.

Steel Pipe

Butt-welded and lap-welded pipe, black and galvanized; copper-bearing pipe.

Boiler Tubes

Genuine old-fashioned knobbled charcoal iron tubes; double-pass steel tubes. Double-pass copper-bearing steel tubes.

Steel Sheets

Hot-rolled, hot-rolled annealed, cold-rolled, heavy cold-rolled sheets; furniture, heavy furniture, automobile sheets; tack plate; galvanized, flat and formed sheets; painted formed sheets; special-finish sheets. Sheets of BETH-CU-LOY (copper bearing steel).

Tin Plate

Coke tin plate; black plates; galvanizing, enameling and lithographing stock.

Tool Steels

Bethlehem special high speed steel; carbon and alloy tool steels; cobalt magnet steel; hot-work tool steels; die steels; valve steels; rivet set and pneumatic chisel steels; special tool steels; tool steel billets, of all grades. Rock and mine drill steels, hollow and solid.

Corrosion-Resisting Steels

BETHADUR and BETHALON, covering practically every requirement for corrosion-resisting steels.

Tools

Rivet sets, punches and dies; chisel blanks and chisels; hot and cold friction saws; steel stamps (letters and figures for hot and cold work); slitting shears, shear blades; special high speed tool holder bits; special tools.

Wire and Wire Products

Plain, bolt, screw, chain, extra-soft rivet and hard bright nail wire; bright processed, annealed, normalized heading and telephone wire; galvanzied wire; wire rods; BETHANIZED (special zinc-coated) wire; clothes-line wire; soft-processed wire; stapling wire; border wire; APEX and INVINCIBLE spring wire; barbed wire; SILVER STAR bale ties. CAMBRIA woven wire field and poultry fence. Nails.

Steel Fence Posts

Posts for farm fencing; snow fence posts; highway sign posts.

Structural Shapes

Bethlehem wide-flange beams, girders, and H-columns; joists and stanchions; standard beams, channels and angles; car and shipbuilding shapes; standard and special T- and Z-bars.

Steel Plates

Universal and sheared plates, for all purposes; slabs.

Flanged Products

Tank heads, boiler heads, dome sheets, manheads, yokes, bolts and saddles; miscellaneous flanged plate work.

Concrete Reinforcing Bars

Bethlehem deformed bars of constant section, in standard rounds and squares.

Steel Sheet Piling

Bethlehem (Lackawanna) steel sheet piling for bulkheads, jetties, cofferdams, and similar applications.

BETHLEHEM STEEL

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, *General Offices:* Bethlehem, Pa. *District Offices:* Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Indianapolis, Milwaukee, New York, Philadelphia, Pittsburgh, St. Paul, St. Louis, Washington, Wilkes-Barre, York *Pacific Coast Distributor:* Pacific Coast Steel Corp., San Francisco, Seattle, Los Angeles, Portland, Honolulu. *Export Distributor:* Bethlehem Export Steel Corp., New York.